Bastyr Materia Medica

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Achillea millefolium
Aconitum napellus
Adonis vernalis
Aesculus hippocastanum
Agropyron repens
Alchemilla vulgaris
Aletris farinosa
Allium cepa
Allium sativum
Aloe barbadensis
Althea officinalis
Amni visnaga
Ananassa sativa
Anemone pulsatilla
Angelica archangelica
Angelica sinensis
Apium graveolens
Arctium lappa
Arctostaphylos uva ursi
Arnica montana
Artemeisa spp.
Asclepius tuberosa
Aspidosperma quebracho blanco
Astragalus mebranaceous
Atropa belladonna
Avena sativa
Baptisia tinctoria
Barosma betulina
Berberis aquafolium
Berberis vulgaris
Betula pendula, B. alba.
Borago officinalis
Boswellia spp.
Brassica nigra
Bryonia alba
Bupleurum falcatum
Calendula officinalis
Camellia sinensis
Capsella bursa pastoris
Capsicum annum
Caryophyllus aromaticus
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Centella asiatica
Cephaelis ipecacuanha
Chamelerium luteum
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Chimaphila umbellata
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Cimicifuga racemosa
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Cineraria maritima
Cinnamomum verum
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Cola nitida
Coleus forskohlii
Collinsonia canadensis
Commiphora molmol
Commiphora mukul
Convallaria majalis
Coptis chinensis
Corydalis dicentra
Crataegus oxycantha
Cucurbita pepo
Curcuma longa
Cynara scolymus
Datura stramonium
Digitalis purpurea
Dioscorea villosa
Dryopteris felix-mas
Echinacea angustifolia
Eleutherococcus senticosus
Ephedra sinica
Equisetum spp.
Eriodictyon californicum
Eschscholtzia california
Eucalyptus globulus
Eugenia cardamomum
Eupatorium perfoliatum
Eupatorium purpureum
Euphrasia officinalis
Foeniculum vulgare
Fucus vesiculosis
Fumaria officinalis
Galega officinalis
Galium aparine
Ganoderma spp.
Gaultheria procumbens
Gelsemium sempervirens
Gentiana lutea
Geranium maculata
Ginkgo biloba
Glycyrrhiza glabra
Grifola frondosa
Grindelia caporum
Gymnema sylvestre
Hamamelis virginiana
Harpagophytum procumbens
Humulus lupulus
Hydrangea arborescens
Hydrastis canadensis
Hyoscyamus niger
Hypericum perforatum
Hyssopus officinalis
Inula helenium
Iris versicolor
Juglans spp
Juniperus communis
Larrea tridentata
Lavendula officinalis
Lentinus edodes
Leonurus cardiaca
Leptandra virginica
Ligustrum lucidum
Ligusticum porteri
Linum usitatissimum
Lithospermum spp.
Lobelia Inflata
Lomatium dissectum
Lycopus virginicus
Marrubium vulgare
Matricaria recutita
Medicago sativa
Melaleuca alternifolia
Melilotus officinalis
Melissa officinalis
Mentha spp.
Menyanthes trifoliata
Mitchella repens
Momordica charantia
Myrica cerifera
Oenothera biennis
Oplopanax horridum
Panax spp.
Parietaria officinalis
Passiflora incarnata
Paullinia cupana
Pausinystalia yohimbe
Petroselinum crispum
Peumus boldo
Phyllanthus amarus
Phytolacca decandra
Picorrhiza kurroa
Pimpinella anisum
Piper methysticum
Piper nigrum
Piscidia erythrina
Plantago afra
Plantago lanceolata
Podophyllum peltatum
Populus spp.
Propolis
Prunus serotina
Pulmonaria officinalis
Pulsatilla vulgaris
Pygeum africanum
Quercus robur/ Q. alba
Rauwolfia serpentina
Rhamnus purshiana/ R. frangula
Rheum officinale
Rheum palmatum
Ricinus communis
Rosmarinus officinalis
Rubus idaeus
Rumex crispus
Ruscus aculeatus
Salix spp.
Salvia officinalis
Sambucus nigra /S. canadensis
Sanguinaria canadensis
Sarothamnus scoparius
Sassafras lignum
Schisandra chinensis
Scilla maritima
Scrophanthus
Scutellaria baicalensis
Scutellaria laterifolia
Selencerius grandiflorus
Serenoa repens
Silybum marianum
Smilax officinalis
Spilanthes oleracea
Stachys officinalis
Stevia rebaudiana
Stillingia sylvatica
Symphytum officinalis
Syzygium cumini
Tabebuia avellanedae
Tanacetum parthenium
Tanacetum vulgare
Taraxacum officinalis
Thuja occidentalis
Thymus vulgaris
Tillia europa
Trifolium pratense
Trigonella foenum-graecum
Trillium pendulum
Turnera diffusa
Tussilago farfara
Ulmus fulva
Uncaria gambir
Uncaria tomentosa
Urtica dioica
Usnea barbata, U. plicata
Vaccinium macrocarpon
Vaccinium myrtillus
Valeriana officinalis
Veratrum album
Verbascum thapsus
Verbena officinalis
Viburnum opulus/ V. prunifolium
Vinca minor
Viscum album
Vitex agnus-castus

Withania somnifera | Zanthoxylum americanum | Zea mays | Zingiber officinalis

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The following references have been used to complete the monographs (not all references have been exhausted for each herb however):

- Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898
- Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy… Eclectic Medical Publications, Sandy, OR 1985
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- Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001.
- Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000.
- PDR, 2nd ed. (see Steve Parcell)
- Weiss RF. Herbal Medicine, 6th ed. Hippocrates Verlag GmbH 1996.

Definitions:

Biliousness: A nonspecific term for a congestive disturbance with anorexia, coated tongue, constipation, headache, dizziness, pasty complexion, and, rarely, slight jaundice assumed to be from hepatic dysfunction.

Achillea millefolium

Asteraceae (Compositae)

Common name: Yarrow

Habitat:[1]

- Yarrow mainly grows in the regions of eastern, southeast, and central Europe, and on the southern edge of the Alps from Switzerland to the Balkans.

Botanical description: [2]

- Flower and Fruit: The composite flowers are white, pink, or purple in dense cymes with small capitula. The bracts are imbricate, long, thorn-tipped, and taper to a point. There are 5 white female florets. The disc florets are tubular yellowish-white, and adrogenous. The fruit is 1.5-2 mm long.
- Leaves, Stem, and Root: 0.1-0.5 m high plant with hardy, horizontal rhizomes, which grow from underground runners. Stem is simple erect, and hairy. Leaves are lanceolate and multi-pinnate with short-acute tips.

Part used: Herba

Energetics: Conflicting opinions

- Sustaining and warming[3]
- Bitter, astringent, sweet, cool, dry[4]

Constituents: [5]

- Volatile oil (0.2-1.0%)
- Sesquiterpene lactones
- Polyynes
- Alkamids
- Flavonoids: including rutin,apigenine-7-O-glucoside, luteolin-7-O-glucoside
- Betaine

Pharmacology [6, 7]

- The volatile oil, which is rich in sesquiterpene lactones, gives Yarrow its anti-inflammatory activity.
- Alkamides (which are also found in Echinacea) may further reduce inflammation. Animal studies have shown this herb can reduce smooth muscle spasms, which might further explain its usefulness in gastrointestinal conditions.
- The alkaloid obtained from Yarrow, known as achilletin, reportedly stops bleeding in animals. It soothes the digestive system by relieving muscle spasms in the intestines, promotes the flow of digestive bile, fights bacterial invasion, and firms and tightens tissues.
- Three new antitumor sesquiterpenoids, achimillic acids A, B and C, were isolated as methyl esters from Achillea millefolium and their structures were determined spectroscopically. The compounds were found to be active against mouse P-388 leukemia cells in-vivo.[8]

Medical actions:

- Tonic bitter, anti-inflammatory, carminative, spasmolytic, antiphlogisitic (volatile oil)[9], diaphoretic, anti-hemorrhagic, antispasmodic, alterative, diuretic, astringent.

Traditional Medicinal Uses:

- Used as a vulnerary, as an ointment made for wounds, and for dispelling melancholy. It was used in spell divination and in Eastern Europe was used to bring about visions of a future spouse. It has been made into a snuff and was a salad ingredient in the 17th Century. It has been used for brewing beer in Sweden and Africa. It has been known to be useful as an anti-inflammatory, for cramps, fever, piles, scabs, for baldness prevention, as a uterine tonic, rheumatism and toothache.[10]
- Eclectics used yarrow to relieve urinary problems (such as urinary irritation, strangury, nephritis (Bright's dz), urinary suppression, hematuria), gynecological complaints (leukorrhea with relaxed and irritated vaginal walls, atonic amenorrhea, menorrhagia), and gastrointestinal conditions (gastric and intestinal atony, dysentery, flatulence).[11]
- Ellingwood recommended yarrow for all forms of passive hemorrhage, for urinary complaints, and for hot, dry burning skin at the beginning of acute asthenic fevers, with suppressed secretion. He noted that Achillea is beneficial for the mucous membranes as it relieves irritation and profuse secretion, which he took advantage of to treat mild diarrhea. [12]

- Cook stated that the employment of Achillea "should be limited by the conditions of a depressed but not irritable pulse, cold skin and relaxation of the mucous membrane… (and) although of value, it should not be overrated," [13] suggesting a role for this botanical as supportive in Physiomedical formulations. In turn, it was used for gastric and intestinal atony. In particular, Cook used Achillea for feeble conditions of the digestive tract described by "precarious appetite, passive looseness of the bowels and consequent nervous prostration." [14]
- Summary:
- Genitourinary Conditions: Achillea was employed the Eclectic physicians for urinary irritation and in chronic urinary tract conditions to provides tone to the urinary system. [15] Scudder described the application for irritation of the kidneys, vesical and urethra with the action being similar to Arctostaphylos and Buchu. [16] The Physiomedical indication for Achillea was urinary incontinence. [17]
- Gynecological Conditions: In regard to female reproductive complaints, Achillea was employed in both leucorrhea with atonic and irritated vaginal mucosa, gleet (mucous discharge from the urethra in chronic gonorrhea), atonic amenorrhea and menorrhagia. [18, 19, 20, 21]
- Inflammatory Conditions: Cook noted that the warm infusion stimulates slow perspiration and elevates the temperature of the skin, which effect was put to use in a variety of fevers including those of an intermittent nature. [22] The use of Achillea as a diaphoretic was also highly regarded by the Eclectics. Ellingwood specifically indicated Achillea for hot, dry burning skin at the beginning of acute asthenic fevers, with suppressed secretion. [23]
- Male Conditions: Ellingwood indicated that Achillea was used for fever in acute epididymitis. [24]

TCM Prospective: [25]
- Vitalizes the blood, removes congestion and moderates menstruation; promotes astriction, resolves mucous damp and stops bleeding and discharge.
- Increases reproductive qi and promotes menstruation as well as resolves qi constraint to relieve pain and spasms.
- Resolves Liver/Spleen disharmony: stimulates digestion, promotes bile flow reducing liver congestion, fullness and appetite loss.
- Promotes sweating dispelling wind cold/heat.

Current Medical Uses:
- Achillea is a nervous and smooth muscle relaxant having both stimulating and relaxant properties. Thus, Achillea appears to be homeostatic in these tissues. Achillea is both a relaxant and tonifying agent for the smooth muscle of the pelvic viscera. Achillea influences the autonomic nervous system to relieve spasm and provide general tonification. It is astringent and used as a hemostatic in a variety of bleeding conditions associated with mucous membranes. As a diaphoretic, it is utilized in any febrile condition, including acute, chronic and recovery phases. [26]
- Weiss states that good results can be achieved only with long-term regular use. Although Mill and Bone utilize Achillea in a variety of conditions, their emphasis appears to be placed on its use as supportive rather than leading herb. Bill Mitchell has observed that Achillea supports both the liver and kidney where he utilizes Achillea in bitter combinations for sluggish digestion with Chionanthus and Gentiana (aa).
- Cardiovascular Conditions: Varicose veins, elevated diastolic blood pressure. [27]
- Gastrointestinal Conditions: Being predominately bitter, Achillea is used for atonic states of the stomach. [28] The German Commission E lists indications as loss of appetite and dyspeptic ailments, such as mild, spastic discomforts of the gastrointestinal tract. [29] Mills and Bone include the use of Achillea as a diaphoretic herb to control fever in gastrointestinal infections and viral hepatitis. [30]
- Gynecological Conditions: Achillea is considered a universal regulator of female reproductive function. It achieves this effect through vitalizing the venous circulation to remove uterine and pelvic congestion. The essential oil appears to be amphoteric. It is a uterine stimulant, and relieves delayed, painful menses and has a spasmolytic effect allaying dysmenorrhea. The herb is used as a hemostatic in dysfunctional uterine bleeding. [31] Weiss states that Achillea's main area of indication is spastic parametrophathy (cramp-like pain in the pelvic area, often not clearly defined by location, back pain, vaginal discharge, pruritis, painful breasts and dysmenorrhea). [32] In regard to menorrhagia, Achillea will check excessive bleeding if taken long-term and is used as a supportive herb for uterine myomas. [33] As sitz bath Achillea can be used in the treatment of painful, cramp-like psychosomatic conditions in the lower part of the female pelvis. [34]
- Respiratory System Conditions: Achillea is indicated as a diaphoretic in acute and chronic bronchitis. [35]

Pharmacy:
Internal:
- General recommendations:
- 4.5g herb/day or 3g flowers/day for teas or other galenic preparations. [36]
- Infusion:
- 1-2 g of herb in 150 ml boiled water x 10-15 min. Sig: TID ic [37]

- As diaphoretic: 4 cups yarrow tea at nigh, cover up and sweat out disease
- Succus (pressed juice from fresh herb): Sig: 5ml (1tsp) TID ic[38]
- Fluid extract:
- 1:1(g/ml) Sig: 1-2 ml TID ic[39]
- ½-1 drachm[40]
- Tincture:
- 1:5 (g/ml). Sig: 5ml TID ic[41]
- As diaphoretic: not as effective as tea. 15-40 gtts[42]

External

- Sitz bath: 100g herb/20L (5 gal) warm or hot water. Soak 10-20 min, rinse.[43]

Contraindications:

- Allergy to Yarrow or other composites.[44]
- Pregnancy. [45] [46] [47]

Toxicity: The volatile oil contains thujone, which is a neurotoxic compound[48].

Aconitum napellus

Ranunculaceae

Common name: Monkshood, Wolfsbane

Habitat:

Botanical description: A robust, erect plant with violet-blue flowers occurring in racemes , followed by capsules of angular, wrinkled seeds. The root is black, conical with white and starchy fracture.

Parts used: root

Constituents:

- Nor-diterpene alkaloids[49] (1.2%): including aconitine, mesaconitine, hypaconitine, N-desethyl aconitine, oxoaconitine, aconine, neopelline, picraconitine, napelline, benzoylaconine, traces of ephedrine and sparteine;
- Other: Acids (aconitic, itaconic), Sugars, Starch

Medicinal actions: Sedative, anodyne, febrifuge

Pharmacology: The alkaloids in Aconite stimulate and then depress the myocardium, smooth muscles, skeletal muscles, central nervous system and peripheral nerves.[50] Aconite was observed to increase the force of contraction of the heart via its stimulating effect on the nerves innervating the vasculature and the heart. Aconite inhibits ability to transmit nerve impulses by impairing the flux of ions across the nerve membrane. The nocieptive effect is due to adrenergic receptor interaction as opposed to opiod receptor interaction. The efficacy of the drug is based on the di-ester alkaloids aconitin, mesaconitin, and hypaconitin. Aconitin raises membrane permeability for sodium ions, and retards repolarization. Aconitin is initially stimulating, and then causes paralysis in the motor and sensitive nerve ends, and in the CNS. The other di-ester alkaloids function in a similar fashion. Hypaconitin works more intensely. Aconitin applied in small doses triggers bradycardia and hypotension; in higher doses it has, at first, a positive inotropic effect, followed by tachycardia, cardiac arrhythmia, and cardiac arrest. Di-ester alkaloids were shown to be analgesic in animal experiments. Applied topically in humans, the drug is initially stimulating, in the form of itchiness or burning, and then anaesthetizing. In people with fever, the drug causes outbreaks of sweat and has an anti-febrile effect. Therapeutic doses influence the heart minimally; the heart rate may increase slightly. Given orally, the drug is active after a few minutes. [51]

Traditional Medicinal Use:

Specific Indications and Uses: The small and frequent pulse, whether corded or compressible, is the direct indication; asthenic febrile state, with or without restlessness; chilly sensations; skin hot and dry; irritation of mucous membranes, with vascular excitation and determination of blood; hyperemia; tonsillitis and laryngitis, early stage; simple colitis;[52] either elevated or depressed temperature and not due to sepsis, early stage of fevers with or without restlessness."[53]

A remedy, such as aconite, which stimulates the vascular system to normal activity in minute doses, reducing febrile states, described as a "special sedative" by the Eclectic physicians. As a special sedative, Aconite was deemed useful in all asthenic febrile and inflammatory diseases and in all affections in which there is an increase of nervous, vascular, or muscular action with determination of blood to the parts. Cook did not describe the use of Aconite, therefore the following indications are based on Eclectic observations.

- Cardiovascular Conditions: Aconite was observed to be a positive inotrope and increase the tone of the blood-vessels, particularly capillaries. Scudder considered Aconite the remedy when capillary circulation is poor due to dilatation and lack of tone causing marked enfeeblement of the circulation, which is manifested by changes in the pulse (see the Aconite monograph in Kings for more detail on pulse descriptions). In cardiac diseases, it has been beneficially employed in palpitation secondary to irritation and for heart spasm, with a feeling of suffocation and as if the heart's action would cease; it is a prompt remedy.
- Dermatologic Conditions: The action of Aconite was well regarded in many inflammatory skin diseases as in erysipelas, when high fever is present. The Eclectics believed that no remedies surpassed aconite and Belladonna in the exanthematous diseases, and very frequently no other remedy than aconite would be indicated in scarlatina and measles. Here the hot, dry skin, with vascular excitation, indicated Aconite. Fever was observed to fall as soon as the eruption appears, which aconite aids in bringing out.
- EENT Conditions: Its effect was understood to shorten the inflammatory stage and allay pain in acute catarrh of the middle ear, though suppuration was not always averted. Internal and external use of Aconite was applied in mastoid disease.
- Gastrointestinal Conditions: Aconite was one of the first remedies for gastrointestinal diseases in the Eclectic practice, especially in bowel troubles of children. All disorders resulting from cold or with inflammation, specified aconite as a part of the treatment. In aphthous conditions, with fever, Aconite was combined with Phytolacca. Diarrhoea, cholera infantum, cholera morbus and acute gastrointestinal irritation, were treated with aconite and Ipecac. In dysentery, aconite, combined with ipecac and magnesium sulphate, was used as a very prompt remedy. Aconite was often indicated in the diarrhoea of teething. Combined with Gelsemium, Aconite was considered of value in cases of influenza ("la grippe").
- Gynecological Conditions: Recent amenorrhea, due to cold, called for aconite if the circulation and temperature are

increased. Disorders of the menopause, with alternate chills and flushes of heat, "with rush of blood to the bead," cardiac palpitation, dyspnea, gastric fullness, and sense of distension in the bladder, with frequent attempts to pass urine, are relieved by the usual dose of aconite every half hour

In uterine hemorrhage, as menorrhagia, with hot, dry face and excited circulation, aconite was used for relief.

- Inflammatory Conditions: King noted that in asthenic or adynamic states Aconite reduces fever, generally in the proportion in which it controlled the heart rate: if the temperature was high, it reduced it; if it was abnormally low, it raised it. In simple fevers, aconite was used to aid diagnosis: if in twelve hours' treatment with aconite the patient is not well, or markedly improved, he/she has more than a case of simple fever. In scarlatina, inflammatory fever, acute rheumatism, peritonitis, gastritis, and many other acute disorders, it has been used with the most decided advantage. Rheumatic and intermittent fevers called for it, especially when slight chilly sensations are repeatedly experienced. Aconite was use to increase the action of Cimicifuga in acute rheumatism, and particularly where there is a tendency to muscular spasm, but infection must not be present.
  Aconite was also used to decrease peridental inflammation.
  Mental perturbation with fever, a fear of impending disaster and melancholia, was said to be relieved by Aconite: it was considered "the pulsatilla of the febrile state."
- Neurological Conditions: By its action on the sensory nerves, Aconite was considered a valuable remedy in various forms of neuralgia. Its action on neuralgias was not observed to be pronounced when administered alone in most instances, but rather aids other indicated remedies, particularly where fever is a concomitant condition. For example, in facial neuralgia, Aconite was combined with Piper methysticum.
  Aconite was observed to act as a gentle stimulant to the sympathetic system. Consequently, it was used to decrease irritation and inflammation in the parts supplied by the sympathetic nervous system. It also has a tendency to lessen pain and nervous irritation.
- Ophthalmological Conditions: Hyperemic, edematous conjunctiva, with a feeling of burning and dryness, were the indications for Aconite's use locally and internally in inflammatory affections of the eye and its related structures.
- Pulmonary Conditions: By its control over the sympathetic nervous system, and its influence on the circulation and temperature, Aconite was regarded as one of the most important remedies in the treatment of respiratory lesions. Aconite was considered the remedy for irritation of the mucous surfaces (compare with Bryonia).
  Acute catarrh, nasal and faucial, acute pharyngitis, and ulcerated tonsils, with elevated temperature were used as indications for aconite. It was the first remedy thought of in tonsillitis, spasmodic and mucous croup. It was used internally and locally. In spasmodic croup, Aconite was observed to quickly allay spasm and dyspnoea. In tonsillitis it was used to materially lessen the duration of the disease.
  Its use in acute bronchitis and laryngitis provided good results. In pneumonia, catarrhal or fibrinous, it was used in the earlier stage to control the inflammatory process, though of less value in the latter stage when Bryonia was preferred. It was considered one of the best agents to prevent acute catarrhal pneumonitis, as a complication of measles, and one of the best to control it in case it does supervene. In pleurisy it was associated with Bryonia in the earlier stage, with sharp pain, marked chill and high temperature, and the use of the Bryonia was continued to remove the effusions after the acute pains had subsided. It was said to give relief in asthma, with high temperature.
- Topical Applications: Locally, aconite has been used in painful and neuralgic states.

Current Medicinal Use:

Aconite is considered to be a powerful poison and is therefore not used often internally. In small doses it has some internal indications. No human trials for Aconite have been performed to date.

- Gastrointestinal Conditions: In gastrointestinal irritation manifesting as nausea and vomiting or diarrhea with fever present, aconite would be administered and expected to allay the irritation within hours.
- Immune Conditions: Aconite was also used to reduce fever and inflammation. Aconite was most specifically indicated in sudden onset fevers. Its administration would restore normal body temperature, primarily through vasodilation in the extremities, and relieve associated pain and inflammation quickly. Aconite was also used for neuralgias to relieve the pain and any associated inflammation.
- Neurological Conditions:
- Topical Applications: Aconite will cause localized anodyne and antiinflammatory effects. However, the alkaloids are absorbed through the skin and thus minute doses must be used topically to avoid toxicity. One to two drop added to a ½ oz ear drop formula is an example of an external anodyne application.
  Other topical indications include trigeminal neuralgia, sciatica, and respiratory complaints.

Pharmacy: Aconite has a small therapeutic window

1:10 tincture: 1-10 drops daily dose in 4 oz. water, 1 tsp of the water mixture q ½-2 hr. to achieve a 1/30th drop dose.
for croup: 1 drop in 16 oz. water, 1 teaspoon q 15-30 min. Max dose is one drop. (Alschuler)
According to King:[54]
Specific tincture: 1-5 gtt tincture (strength not specified) in 4 oz. water Sig. 1 tsp q 1/2 to 1 hour.

3:1 Tincture 70% alcohol: 1 to 3 drops
Extract: 1 to 2 grains (made from evaporation of an approximately 3.5: 1 percolate.
Fluid extract: 1/4 to 1 drop (strength not specified)

Drug Interactions: No information is currently available from the selected resources.

Contraindications: No information is currently available from the selected resources.

Toxicity: Toxic effects may be seen with greater than 10 drops of the tincture. Fatal doses are: 1 gm of plant, 5 ml of tincture, 2 mg of aconitine. Toxicity symptoms are: Nausea and vomiting, tingling or burning followed by numbness of the mouth, throat, and hands; dizziness, restlessness, loss of speech control; intense headache; pinpoint pupils, blurred vision; slow and weak pulse; hypotension; irregular heartbeat and breathing; chest pain; ventricular fibrillation in about 2 hours (1-6 hours); sweating and hypothermia; patient is cold and cannot stand; face is pale, extreme anxiety; diarrhea, muscular weakness, convulsion and death due to respiratory failure. Treatment: Activated charcoal orally, gastric lavage; CPR and O_2 prn; Trendelenburg position; stimulants (coffee or nux vomica), digitalization for cardiac depression; atropine to prevent slowing of heart, phenytoin for heart.

[49] Ibid

[50] Brinker F, *The Toxicology of Botanical Medicines*, 2nd ed., 1983:2.

[51] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[52] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[53] Felter, W, *The Eclectic Materia Medica, Pharmacology and Therapeutics*, Eclectic Med. Publ, Sandy, OR, 3rd reprint 1994, originally published 1922.

[54] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

Adonis vernalis

Pheasants eye

dyspnea (30x), cardiac incompetence

Aesculus hippocastanum

Hippocastanaceae

Common name: horse chestnut

- Sweet chestnut is Castanea vesca whose leaves are used as an expectorant in bronchitis and whooping cough
- A. glabra and A. flava, both known as the Ohio Buckeye, are said to possess properties similar to A. hippocastanum

Habitat:

Botanical description:

Part used: fruit (nut), bark (not commonly used in modern practice)

Energetics:

Constituents [55]

FOLIUM (leaf)

- Courmarin glucosides: aesculin, flavonol glycosides.
- Triterpene saponins
- Hydroxycoumarins: chief components aesculin, in addition fraxin and scopolin
- Flavonoids: including rutin, quercitrin, isoquercitrin
- Tannins

SEMEN (seed)

- *Triterpene saponins:* (3-8%, saponin mixture known as aescin): chief components beta-aescin (diesterglycoside mixture of the protoaescigenins), through migration of an acetyl group into the more water-soluble, but hemolytically only somewhat cryptoaescigenin, alpha-aescin is an equilibrium mixture made up of beta-aescin and cryptoaescin.
- *Flavonoids:* in particular biosides and triosides of the quercetins
- *Oligosaccharides:* including 1-kestose, 2-kestose, stachyose
- *Polysaccharides:* starch (50%)
- *Oligomeric proanthocyanidins, condensed tannins:* (only in the seed-coat)
- *Fatty oil:* (2-3%)

Pharmacology:

Aesculus acts on the connective tissue barrier between blood vessels and tissue reducing vascular fragility and permeability. The inhibition of exudation discourages edema. [56] As found in different animal tests, the principal ingredient in Aesculus seed extract, the triterpene glycoside mixture, aescin (escin), has an antiexudative and vascular tightening effect. There are indications that Aesculus seed extract reduces the activity of lysosomal enzymes which is increased in chronic pathological conditions of the veins, so that the breakdown of glycocalyx (mucopolysaccharides) in the region of the capillary walls is inhibited. The filtration of low-molecular proteins, electrolytes and water into the interstitium is inhibited through a reduction of vascular permeability. [57]

Aesculus has demonstrated free radical scavenging activity and inhibition of lipid peroxidation in vitro. Aesculus extract demonstrated strong active oxygen-scavenging activity and protective activity in vitro against cell damage induced by active oxygen. Standardized Aesculus extract (containing 70 escin) inhibited enzymatic and non-enzymatic lipid peroxidation in vitro and counteracted the deleterious effects of free radical oxidative stress in mice and rats (20(MOO mg/kg oral, 25 mg/kg IV, respectively).

Escin, in its natural form, is not absorbed in the gut. Rather, modification is necessary for therapeutic use. [58] However, Escin appears to accumulate in the skin and muscles only within the area of topical application. Escin reduces the localized edema associated with inflammation by reducing capillary permeability resulting in decreasing exudation into the interstitial spaces.

The inhibitory effects of plant constituents on the activity of the connective tissue enzymes elastase and hyaluronidase was investigated in vitro. Saponin constituents from Aesculus showed inhibitory effects on hyaluronidase. The activity was mainly linked to escin and, to a lesser extent, its genin, escinol. Triterpene oligoglycosides from Aesculus (escin Ia, Ib, IIa and Iib) exhibited an inhibitory effect on ethanol absorption and hypoglycemic activity on oral glucose tolerance test in rats.[59]

Medical actions: venous trophorestorative, anti-spasmodic, anti-edemic, anti-inflammatory, tonic, astringent, febrifuge, narcotic antiseptic

Historical use: No information is currently available from the selected resources.

Traditional Medicinal Uses:

Specific Indications and Uses: Visceral neuralgia, due to congestion; soreness of the whole body, with vascular fullness, throbbing, and general malaise; throbbing, fullness, and aching in the hepatic region; rectal uneasiness with burning or aching pain; sense of constriction, with itching; large, purple pile-tumors; uneasy sensations and reflex disturbances depending upon hemorrhoids or rectal vascular engorgement.[60]

King noted that Aesculus influences the nervous and circulatory systems, having a selective affinity for the portal circulation. The Eclectics used Aesculus for visceral neuralgia and then only in cases of abdominal plethora, a generalized term for fullness or repleteness in an area (i.e. excess from a TCM perspective). Cook described the bark as a narcotic astringent and not a curative agent. He found the rind of the nuts is a stronger narcotic possessing about one-third the strength of opium, although King stated that this claim is unsubstantiated.

- Cardiovascular Conditions: Use of the specific medication had taught the Eclectics that it is a remedy, for congestion and engorgement, but not active conditions. It was indicated in general by capillary engorgement, a condition of stasis, with vascular fullness and sense of soreness, throbbing, and malaise all over the body. An uneasy, full, aching pain in the hepatic region is also an indication.

  Rectal disorders, such as rectal irritation and hemorrhoids, with marked congestion and a sense of constriction, as if closing spasmodically upon some foreign body, with itching, heat, pain, aching, or simple uneasiness, are indications where Aesculus was known to exert a specific influence: such hemorrhoids are purple, large, do not bleed as a rule, but there is a sense of fullness, or spasm of the parts, and a free diarrhea may be present.
- Inflammatory Conditions: The Eclectics used Aesculus bark in intermittent fever.
- Infectious Conditions: Gangrenous and ill-conditioned ulcers have-been benefited by a strong infusion of the bark.
- Topical Applications: In Europe, during the time of the Eclectics and Physiomedicalists, the oil of horse-chestnuts was considered a valuable local application in neuralgic and rheumatic affections.

Current Medicinal Uses*:*

- Cardiovascular Conditions: Aesculus is a trophorestorative for venous tissue and is found to be much more effective than rutin.[61] This effect is attributed to aesculin. Escin, on the other hand, also exerts an effect on the vascular walls enhancing the ability for tissue fluid to drain into capillaries by increasing intravascular oncotic pressure. Escin has anti-edema and anti-inflammatory properties and decreases capillary permeability by reducing the number and size of the small pores of the capillary walls. The reduction in capillary permeability and edema appears to be due to inhibition of the lysosomal enzymes (mentioned above) which break down the proteoglycans of the ground substance. Investigators have also demonstrated that escin has venotonic activity. Thus, Aesculus is indicated in acute thrombophlebitis, swelling with bruises, fracture, brain trauma and strokes. Clinical trials have supported use for chronic venous insufficiency, varicose veins, and edema of the lower limbs. [62]
  Prophylactic use decreases the incidence of deep vein thrombosis following surgery. Aesculus is indicated in the early phase of inflammation. Thus, Aesculus can be applied topically for hematoma, contusions and other non-penetrating wounds involving edema.

  For varicose veins, Aesculus is combined with bioflavonoids. As mentioned earlier, relaxation of the venous wall contributes greatly to the development of varicose veins. Escin's venotonic activity has been confirmed in clinical trials that demonstrate a positive effect in the treatment of varicose veins and thrombophlebitis. In fact, extracts of Aesculus seed standardized for escin appear to be as effective as compression stockings without the nuisance.

  In a placebo-controlled trial in patients undergoing surgery of the hand, intravenous administration of escin produced a fast reduction in postoperative inflammation and edema. Escin is mainly used by injection; for example, to treat road accident victims with severe head injury, where it reduced the dangerous rise in intracranial pressure, leading to a more favorable prognosis. Escin has been effective in the treatment of cerebral edemas following cranial fractures and cranial traumas with or without retrograde amnesia, cerebral tumors, intracranial aneurysms, cerebral sclerosis, subdural hematomas, encephalitis, meningitis and cerebral abscesses. Depending on the seriousness of the condition, disappearance of cephalgia, vertigo and general discomfort were observed within 3-16 days. Cerebral edemas due to acute vasomotor insufficiency were resolved quickly, while in chronic diseases remission occurred slowly over a long period of administration.[63]
- Musculoskeletal Conditions: Weiss prevented nocturnal leg cramps by taking twenty drops or more at night as a long-term treatment.
- Nervous Conditions: Aesculus has also been used to remove fluid from the spinal ganglia and relieve the pressure on nerve strands in intervertebral disc abnormality. [64] Aesculus may provide relief in other conditions where local tissue edema may be involved as in carpal tunnel syndrome, Bell's palsy.[65]
- Topical Applications: External applications of Aesculus are used in the forms of ointments and gels for varicose veins (it is important not to massage the varicosity in order to avoid inflammation of the vein). After application of the topical form, an elastic bandage or stocking should be worn.

  A gel containing Aesculus extract and heparin was found to be effective in the treatment of acute and chronic traumas and venopathies in an uncontrolled study. In particular, the gel quickly broke down hematomas. The tolerance and efficacy of a topical Aesculus preparation were assessed in 15 patients with first and second-degree chronic venous insufficiency. The Aesculus

preparation contained 1.4 triterpene glycosides calculated as escin and was compared with a preparation containing heparin. Efficacy was assessed via the change in circumference of the lower, middle, and upper leg and by changes in symptoms. Both treatments were well tolerated and the Aesculus preparation showed a higher tendency to improvement than the heparin.[66]

Current Research Review

- **Cardiology:**
  - **Venous insufficiency:**

Study 1:[67]

- Design: Open, controlled clinical trial
- Patients: Forty patients with diagnosed chronic venous insufficiency
- Therapy: Venostasin (horse chestnut seed extract), 600 mg qd or Pycnogenol (French maritime pine bark extract), 360 mg qd x 4 weeks
- Results: Venostasin only moderately but not significantly, reduced the circumference of the lower limbs and marginally improved symptoms. Venostasin had no influence on the determined HDL and LDL values. The authors concluded that Pycnogenol is more efficacious than Venostasin for the treatment of CVI.

Study 2:[68]

- Design: Randomised partially blinded placebo-controlled parallel study design clinical trial
- Patients: Two hundred forty patients with chronic venous insufficiency.
- Therapy: Compression stockings class II or dried horse chestnut seed extract (HCSE, 50 mg aescin, BID) x 12 weeks.
- Results: Lower leg volume of the more severely affected limb decreased on average by 43.8 mL (n = 95) with HCSE and 46.7 mL (n = 99) with compression therapy, while it increased by 9.8 mL with placebo (n = 46). Significant edema reductions were achieved by HCSE and compression, compared to placebo, and the two therapies were shown to be equivalent. Both HCSE and compression therapy were well tolerated.

Study 3:[69]

- Design: Uncontrolled clinical trial
- Patients: Thirty five patients with chronic venous insufficiency
- Therapy: Standardized horse chestnut extract
- Results: Horse chestnut extract was effective against foot edema without inducing changes in hematocrit, body weight and serum potassium.

Study 4:[70]

- Design: Uncontrolled clinical trial
- Patients: Healthy volunteers and patients with varicose veins
- Therapy: Standardized horse chestnut extract
- Results: There was an increase in venous tone without arterial constriction or change in blood pressure.

Study 5:[71]

- Design: Double-blind placebo-controlled clinical trial
- Patients: Patients with variocose veins
- Therapy: Standardized Aesculus extract, 600 mg (100 mg escin) qd x 3 wks
- Results: Reduction of subjective symptoms.

Study 6:[72]

- Design: Double-blind placebo-controlled clinical trial
- Patients: Forty patients with leg edema caused by chronic deep venous incompetence
- Therapy: Standardized Aesculus extract 738-824 mg qd (containing 150 mg escin) or placebo x 7 weeks
- Results: Significant reduction in average leg volume was observed for the treated group compared to placebo, both before and after an edema provocation test. Leg pressure at rest was decreased (indicating better venous tone) and pronounced alleviation of symptoms occurred in the treated group.

Study 7:[73]

- Design: Randomized double-blind placebo-controlled clinical trial
- Patients: Twenty two patients with chronic venous insufficiency.
- Therapy: Aesculus extract, 600 mg (100 mg escin)
- Results: Three hours after taking Aesculus extract, a significant decrease in the capillary filtration coefficient (22%) was observed in the treated group.

Study 8:[74]

- Design: Randomized double-blind placebo-controlled clinical trial
- Patients: Twenty patients with venous insufficiency
- Therapy: Standardized Aesculus extract, 600 mg qd (100 mg escin) x 4 weeks.

- Results: Significant improvement in volume changes of the foot and ankle, as wells as in symptoms such as edema, pain, fatigue, feeling of tension and itching. No changes in venous capacity or calf muscle spasm were observed.

Study 9:[75]

- Design: Randomized double-blind placebo-controlled clinical trial
- Patients: Seventy-four patients with chronic venous insufficiency and lower leg edema
- Therapy: Standardized Aesculus extract, 600 mg qd, (100 mg escin) x 8 weeks
- Results: Leg volume was reduced, progress of edema was slowed, and subjective symptoms were improved in the treatment group.

Study 10:[76]

- Design: Randomized double-blind placebo-controlled crossover clinical trial
- Patients: Twenty women with pregnancy-induced varicose veins or chronic venous insufficiency.
- Therapy: Standardized Aesculus extract x 4 weeks
- Results: Significant reduction in leg volume

Study 11:[77]

- Design: Randomized double-blind clinical trial
- Patients: Thirty patients with peripheral venous incompetence
- Therapy: Standardized Aesculus extract, 600 mg qd, (100 mg escin) x 4 weeks
- Results: Reduction in leg circumference and improvement in subjective symptoms

Pharmacy: Use should be limited for 2-4 weeks at which point evaluation of patient status is considered (Alschuler) although Mills and Bone state that no restriction on long term use has been demonstrated. Although escin appears to work well alone, the whole plant seems to have greater benefit as escin combined with bioflavonoids has a greater effect and escin bioavailability through the gut is poor.[78]

Prepared products: Reparil (Madaus): modified aescin; Other prepared products: Apoplectal, Venastasin, Cyclovenfc
IV (β-escin) acute conditions, not to exceed 20 mg (infants: 0.1 mg/kg; children 3-10yrs: 0.2 mg/kg)
Dried seed: 1-2 g qd (Preparations require soaking and discarding the water prior to processing to remove a strychnine property.)
Tinctures and Extracts:

5:1 standardized extract: 200 mg, standardized to contain 40 mg escin, 2-3 tablets qd
1:2 liquid extract: 2-6 ml
1:5 tincture: 5-15 ml

Drug Interactions:

- Anticoagulant therapy: bark should not be used with anticoagulants due to antiplatelet activity of esculetin (speculative).[79]

Contraindications: Generally, Aesculus is contraindicated in children under 4, acute kidney inflammation, gastric ulcer, topical on broken skin and pregnancy (Mills and Bone disagree indicating its use in pregnancy). Brinker also contraindicates its use in bleeding disorders due to inhibition of LOX and platelet aggregation.[80]

Toxicity:

Aescin has hemolytic properties, though such property is minimal within therapeutic doses. However, past reports of acute renal failure from injection of β-aescin have revealed to be due to dosages much greater than manufacturer recommendations being used in children.[81]

In over-doses it affects the cerebro-spinal system somewhat after the manner of nux vomica. Dizziness, fixation of the eyes, impairment of vision, vomiting, wry-neck, opisthotonos, stupor, and tympanites are among its effects. In lethal doses these symptoms are increased, coma supervenes, and death finally takes place. The dried powder of the nut inhaled causes violent sneezing.

Agropyron repens/Elymus repens **Poaceae**

Common name: couchgrass

Habitat:
Indigenous to the temperate regions of Northern Hemisphere. Introduced to Greenland, S. America, Australia, and New Zealand.

Botanical Description:

Parts Used: Rhizome

Energetics:[82] A bit sweet and bland, cold, moist

Constituents: [83]

- Saponins
- Carbohydrates (3-8% triticin polysaccharide, 2-3% inositol and **mannitol**, 10% mucilage)
- Volatile oil (agroyprene), fixed oil
- β carotene
- Minerals (silica, iron, potassium)
- Vanilloside
- Silicic acid and silicates.

Pharmacology:

- Agropyron is considered a saponin-based diuretic. [84]
- Mannitol is used as a diuretic intravenously in acute oliguric renal failure. However, it is unlikely that mannitol by itself plays a significant role in diuretic action of Agropyron, since its absorption from the gut is poor, but similar sugar molecules may account for duiresis.[85]

Medicinal actions:

- Diuretic, expectorant (Alschuler)
- Diuretic, demulcent, anti-microbial [86, 87]

Traditional medicinal uses: [88]

- Genitourinary Conditions: Agropyren exerts a soothing, diuretic influence on the urinary system, greatly increasing the flow of urine without stimulating actual renal secretion. It is used whenever urine has a high specific gravity and irritation of the mucosa of the bladder or kidneys. Such conditions include pyelitis, hematuria and catarrhal and purulent cystitis. Agropyron will soothe the irritation caused by gravel. As for functional complaints, it is indicated in tenesmus and strangury (dysuria with interrupted urination in drops produced by spasmodic musculature contraction of the urethra and bladder). Although not urinary complaints, gout, chronic rheumatism and jaundice can be affected if any of the above conditions are concurrently present. Also, it has been applied to reduce a fever through diuresis.

Current medicinal uses:

- Genitorinary Conditions: Couchgrass is most indicated in irritation of the urinary system manifested by frequent urination and urgency with the passage of mucus and even blood. It is specifically indicated for intense burning sensation and constant desire to urinate. Agropyron is also indicated in incontinence due to the following conditions:
  - Urinary infections such as cystitis, urethritis and prostatitis, particularly in combination with Agathosma, Arctostaphylos or Achillea. [89]
  - Enlarged prostate due to its demulcent properties to soothe irritation and inflammation.[90] Can be combined with Hydrangea.[91]
  - Gravel and kidney stones[92]
- PulmonaryConditions: It is a soothing expectorant and will reduce the irritation of dry, non-productive coughs. It is best used as a tea or cold infusion and has a pleasant taste.
- Other uses: As a tonic diuretic, couchgrass has been used with other herbs in the treatment of rheumatism.[93]

Current Reseach Review

- Search of Medline revealed no human trials as of 1/15/03

Pharmacy:

- Decoction:
    - 2 tsp/cup water. Bring to boil, simmer x 10 min. Drink TID. [94]
    - 5-20 g/day [1 tsp. =1.5g]
- 1:5 tincture: 3-6 ml tid

Drug interactions:

Contraindications:

Toxicity: Agropyrens is well tolerated and no side effects have been reported.[95]

Alchemilla vulgaris

Rosaceae

Common name: Lady's mantle

Habitat: This is a low growing meadow plant. It is very easily cultivated.

Botanical description: A perennial herb with short rhizomes, bearing erect stems and a rosette of basal leaves. The large leaves have demarcated lobes, and are circular in outline. In the morning, the leaved are folded up to form a funnel, containing a few drops of dew. The small, yellow-green flowers are in dense cymes, sepels are in 2 rings of 4 and there are no petals. The fruit is an acheme and the whole plant is covered with soft hairs. The flowers are not pollinated but develop seeds by the process of parthenogenesis.

Part Used: Herba

Active Constituents: Tannins, glycosides, saponins, bitter compounds, volatile oil, salicylic acid

Medicinal actions: Astringent (locally and systemically), anti-hemorrhagic, anti-inflammatory, uterine tonic.

Pharmacology:

Medicinal use:

Alchemilla is especially indicated in cases of excessive menstruation. The tannins are astringent on the uterus in cases of excess menstrual bleeding, postpartum bleeding, and conditions of abnormal tissue growth such as fibroids. The anti-hemorrhagic effect can be seen within 3-5 days of administration and can be given prophylactically 10-15 days before menses. The astringent properties of Alchemilla also make it useful in the treatment of diarrhea and other inflammations of the gastrointestinal system. Alchemilla increases circulation to the reproductive organs and is anti-inflammatory and analgesic due to its salicylates. Alchemilla is most indicated in painful, heavy menses or uterine bleeding from fibroids. Both the pain and the excessive blood loss will be attenuated. Alchemilla may have both phytoestrogenic and progesteronic properties. It is most indicated in cases of relatively high estrogen:progesterone ratio. As a hormone balancer, Alchemilla is especially well-suited for peri-menopausal changes, easing the climacteric symptoms. Alchemilla is an emmenagogue, and as such, will help to stimulate the menstrual flow if suppressed (this is apparently paradoxical to its astringent effects).

According to Mills and Bone:[96]

- Gynecologic Conditions: A main aim of herbal assistance with menopausal changes include assisting the body to adapt to the new hormonal levels by reducing the effects of estrogen withdrawal. Such an effect can be achieved by utilizing saponin-containing botanicals such as Alchemilla vulgaris.
- Gastrointestinal Conditions: Tannin rich herbs, such as Alchemilla are indicated for inflammatory conditions of the digestive tract such as diarrhea following gastrointestinal inflammation.
- Topical Applications: Tannin rich botanicals can be utilized topically for open, discharging lesions, wounds, hemorrhoids and burns

According to Weiss:[97]

- Gynecologic Conditions: This herb has widespread use on one hand and lack of real information on the other. The indication for its use should bye limited to constitutional leukorrhea.

Pharmacy: According to Mills and Bone, tannin rich herbs should be taken after food in most cases. For some upper GI lesions short-term use between or with meals can be used. Long-term used with high doses is not advisable.[98]

Infusion; sig 1-2 tsp./ cup TID [1 tsp. = 0.9g]
Tincture 1:5 25%EtOH; sig 5 ml TID
Fluid Extract 1:1 25% EtOH; sig 1-3 ml TID
Douche (for leukorrhea)

Contraindications: Tannin rich botanicals, in general, are contraindicated in constipation, iron deficiency anemia and malnutrition.[99]

Toxicity:

Aletris farinosa

Haemodoraceae

Common name: Blazing Star, Star grass, Star Root, True Unicorn Root

Habitat: Throughout the U.S. growing in fields and at the edge of swampy woods.

Botanical description: Low-growing, spreading perennial herb. Leaves lanceolate, acute, ribbed, sessile, smooth, flat, pale colored. Flower stem is 1-3 feet high with a spiked raceme of short-stalked, white, bell-shaped flowers. The root is horizontal, tuberous and cylindrical with many fibers from its lower surface.

Parts used: Root

Constituents: Bitter principle, resin, polysaccharides

Medicinal actions: Uterine tonic, ovarian tonic, male reproductive tonic, stimulating expectorant

Medicinal use:

- Gynecologic Conditions: Aletris is very bitter and is a good general tonic. The specific indications for Aletris are extreme weakness of the uterus, often from frequent child-bearing. Hyperactivity of the uterus and ovaries resulting in lack of pelvic tone, deficient menstruation, infertility, pale, insufficient menstrual flow, and anemia are good indications for Aletris. When given as small doses, Aletris is helpful in any situation of pelvic weakness (i.e. prolapsus, menorrhagia, metrorrhagia, irregular menses, infertility). Aletris is a good plant to use in dysmenorrhea. It eases the pain while toning the uterus. Aletris and Viburnum combine well for dysmenorrhea and threatened abortion, easing the pain and relaxing and toning the uterus. In menorrhagia, Aletris will decrease the blood flow and tone the uterus.
  Aletris is useful in infertility and impotence in females and males and results may be seen within a few weeks to several months. Aletris is safe throughout pregnancy and is one of the best preventatives of miscarriage. Aletris is also an excellent partus preparator. Aletris is useful in dyspepsia and anorexia of pregnancy through its bitter tonification of the stomach as it tonifies the stomach and relieves intestinal colic.

According to Weiss:

- Gynecologic Conditions: Aletris exerts a tonic effect (as with all bitters). Its effect is directed toward the pelvic organs with indications of pelvic floor relaxation and prolapse, particularly in older women. Concurrent low back pain responds well also.

According to Scudder:[100]

- Gastrointestinal Conditions: The Aletris is a gastric stimulant and improves digestion.
- Gynecologic Conditions: It has also proven a valuable tonic in uterine diseases.

According to King's:[101]

Aletris was commonly substituted for Helonias (True Unicorn Root) although the plants look, smell and taste nothing alike. It is placed among the simple bitter tonics and stomachics and as such it is employed to promote the appetite and aid digestion and in *flatulence, colic, borborygmi, etc*. This root and its preparations are almost entirely employed in *dyspeptic conditions*; while, in the abnormal conditions of the female reproductive organs, Chamelirium is used.

Pharmacy: decoction:
1/2-1 tsp. dried root/cup water TID (Alschuler)
tincture:
1:5, 1-2 ml TID (Alschuler)
Specific Tincture: 5-20 gtt (King's)
50 mls per week according to NMIMH
Prepare a tincture from viij of the root to Alcohol 76º Oj (pint). The dose would be from two to ten drops. (Scudder)
Aletris Oligoplex (Maddaus)

Contraindications: Caution is advised in use with large amounts during pregnancy due to variable effects on animal uteri of either stimulation or depression (speculative).[102]

The fresh root can be a mucosal irritant.[103] Given the bitter aspect, it is also a stomach acid secretory stimulant and may be inappropriate in peptic ulcer conditions (empirical)[104]

Toxicity: If given in large doses or if taken fresh, Aletris is narcotic, emetic and cathartic.

Allium sativum

Liliaceae

Common name: garlic

Habitat:

Botanical description:

Part used: bulb

Historical use:

Energetics:

Constituents: sulfur containing compounds: sulfoxides (alliin),thiocyanates, volatile oil (0.1-0.3%, composed of about 14 components), protein, high concentration of trace min's (Se), vitamins, glucosinolated, enzymes (alliinase, peroxidase, myrosinase) *(According to Weiss*, garlic also contains vitamin A, thiamine, nicotinaminde, vitamin C, choline, iodine, saponins and male/female gonad hormone-like constituents)[105]

Pharmacology: Weiss noted that isolation of a particular constituent that would have at least the main action is not possible. Hence the full effect of garlic is based on the totality of the principles.

Alliin is exposed to alliinase with crushing which creates allicin. Voliatile oil yields ~ 60% allicin *after exposure to alliinase*[106].

Allicin is readily absorbed into the bloodstream and eliminated primarily via the lungs and skin demonstrating the depth of penetration that garlic has in the body.

Medline: Ali (researcher): 3 g qd for 26 weeks inhibits ADP induced platelet aggregation

Medical actions: antimicrobial (antibacterial and antimycotic), antispasmodic, antidyspeptic, counter irritant, diaphoretic, emmenagogue, expectorant, carminative, digestant, anti-hyperlipidemic, anti-platelet aggregant

Medical uses: In Chinese medicine, garlic is considered a general tonic for the elderly. Garlic exerts an immediate tonic effect that is thought to be based on stimulation of pituitary function which relates to Selye's stress syndrome (Allium Symposium July 19-21, 1983).

According to Cook:[107]

The physiomedicalists described galic as stimulating, moderately relaxing and very diffusable[108]. Cook further stated that garlic excites the mucous secretions, facilitates digestion, improves chronic catarrh and promotes expectoration. Other indications include suppressed menstruation, atonic dropsies and hysteria due to its general excitation of the nervous system.

The poultice is used for bladder paralysis and as a counter irritant, often used as a fomentation on the feet to relieve the brain in "cerebral excitements". Cook states that considerable quantities or external application will excite the circulation and can flush the skin and cause headache. Eardrops are utilized for atonic deafness. Use is contraindicated during inflammation or acute irritation, internally or externally.

According to Murray:

- Immune System: Garlic enemas have been used in the treatment of threadworm and Pinworm infections. Research has demonstrated inhibition of 22 micro-organisms including C. albicans, Aspergillus parasiticus, A. flavus and A. ochraeus. Allcicin appears to be the antimicrobial component. Dr. Murray describes it's action against a variety of microbes:
  - -antibacterial: Staph, Strep, Bacillus, Brucella, Vibrio.
  - -antifungal: C. albicans, Cryptococcus
  - -antihelminthic: Ascaris lumbricoides, hookworms
  - -viruses: HSV, Parainfluenza, Vaccinia, Vesicluar stomatitis, Rhinovirus (ajoene)

  Garlic also decreases nitrosamine formation.
- Cardiovascular System: Indications include arteriosclerosis in which use and effects are long term. *Garlic inhibits the three processes of responsible for arteriosclerosis: hypercholesterolemia, reduced fibrinolysis and increased thrombocyte activity*.
  1. The aqueous extract has been shown to reduce cholesterol levels, again with allicin being identified as the active principle. Garlic also demonstrated preventative effects from raising cholesterol with cholesterol consumption.
  2. Garlic increases fibrinolytic activity by as much as 130% in one study (up to 95.5 % in those patients with infarction). Reduced thrombocyte aggregation occurs as well with another sulphur compound being responsible (methyl allyl trisulphide- 4-10% of garlic)

  The use of garlic in hypertension has been debatable. The crux of the dispute tends to revolve around the preparation of garlic: fresh garlic appears to have a hypotensive effect while this effect is reduced with storage. Other indiciations include intermittent claudication and arteriosclerotic retinopathy angina. Results are less significant with cerebral arteriosclerosis. For

peripheral vascular conditions garlic must be used regularly for long periods, generally at least 3 months. Allium lowers LDL and triglycerides, but the reduction in lipids is approximately 10% for LDL and 13% for triglycerides.

- Gastrointestinal System: Garlic is antiseptic in the intestine being widely indicated for gastrointestinal infections including amoebic dysentery and bacillary dysentery. These two forms of dysentery create a residual irritable bowel that combines functional disorder (spasm, pain, diarrhea, mucous in the stool) and dysbiosis. The antibacterial, antispasmodic, antidyspeptic effects come into play to prevent dysbiosis and relieve gas and diarrhea. Garlic has a dose dependent effect on the intestine in that lower concentrations increased intestinal peristalsis and tone while higher concentrations inhibited both. Apparently, the stimulation of peristalsis and tone is due to a parasympathomimetic mechanism (atropine block). In turn, the spasmolytic action affected smooth muscle directly.
- Metabolic Functions: Garlic can be utilized in the prevention of lead poisoning and in the detoxification of lead.
- Endocrine System: Garlic is utilized in diabetes mellitus and is believed to occupy insulin receptor sites freeing insulin to affect other cells.

Pharmacy:

fresh: 1-3 almond size pieces qd, 100-150 g used for inhibitiion thrombocyte aggregation (effect lasts for 1-2 hrs)
(4000 mg fresh = 10 mg alliin = 4000 mcg allicin potential)
Powdered: 5 g qd
Products: Kwai has been well studied and does show some
standaridized: 68µg allicin (antimicrobial study) (3000 mg)
fluid extract
1:5 tincture: 20 gtt tid
fresh juice: Kneipp brand, 1 T gid
enema: one clove is chopped boiled for 10 minutes in ¼ L water or milk an retained. Tx is once per week.
poultice or compress
enteric coated capsules (Klosterfrau Aktiv-Kapseln)
syrup: 6 oz garlic, sliced and bruised; 16 oz vinegar; 2 pounds sugar: macerate garlic in vinegar for 4 days strain and add the sugar. Considering the high sugar content of this recipe, this author would suggest combining the acetract with a smaller amount of rice syrup until the desired consistency is attained.

Drug Interactions:

Anticoagulants: Garlic can destroy vitamin K producing bacteria in the gut. 3g qd for 26 weeks can reduce platelet aggregation. Therefore, patients on anticoagulant therapy should have PT and INR's monitored to stablized dosage of coumadin.

Contraindications: Allium is not used within 10 days of surgery or with medications that inhibit blood coagulation. Caution should be used in hypercoagulation conditions as well due to embolic complications.

Toxicity: Genarlly well tolerated with side effects being few. Garlic can cause irritation to the gastric mucosa. Garlic breath is a common complaint although it passes quickly. In turn, as garlic exits the lung and skin the odor is noticeable so patients should be aware of this aspect of garlic therapy. Weiss states "if the smell is reduced, so is the medicinal action."

Aloe barbadensis/ A. vera

Common name: Aloe

Habitat:

Botanical description:

Part used:

Historical use:

Energetics:

Constituents: [109]

- Anthracene derivatives: particularly anthrone-10-C-glykosyls, including aloin A, aloin B, 7-hydroxyaloins and 1,8-dihydroxyanthraquinones, including aloe-emodin
- 2-alkylchromones: including aloe resins B, C and D
- Polysaccharides: Mannose-6-phosphate (acemannan). Acemannan is found under the skin in Aloe vera leaves and is often not present in juice or gel preparations.
- Flavonoids

Pharmacology:

The constituents that cause the cathartic laxative effects of aloe latex are anthraquinone glycosides. These molecules are split by the normal bacteria in the large intestines to form other molecules (aglycones), which exert the laxative action. [110] This laxative effect is primarily caused by the influence on the motility of the colon, and stimulation of propulsive contractions; this results in an accelerated intestinal passage and, because of the shortened contraction time, a reduction in liquid absorption. [111]

In addition, stimulation of active chloride secretion increases the water and electrolyte content, thereby strengthening the filling pressure of the bowels, and stimulating intestinal peristalsis.

Aloe functions antibacterially and is effective against Herpes Simplex viruses.[112]

Various constituents have also been shown to have anti-inflammatory effects as well as to stimulate wound healing.[113]

Medical actions: Tonic, laxative, purgative, emmenagogue, and anthelmintic.

Traditional Medicinal Uses:

Specific Indications and Uses: Atony of large intestine and rectum, mucoid discharges, prolapsus ani, pruritis ani, ascaris vermicularis, difficulty in evacuating the lower bowel.[114]

King noted that Aloes exert a decided tonic influence if applied in small doses, but is seldom resorted to for this purpose.

- Gastrointestinal Conditions: Both the Eclectics and Physiomedicalists observed that all varieties of aloes are stimulating to the large intestine, acting slowly but effectively. They observed that Aloes act on the smooth muscle of the large intestines increasing their peristaltic motion rather than effecting copious, thin or watery discharges Aloe was applied for semi-paralysis of the lower bowel and for worms. It was mixed with an alkaline carbonate, as soap, to be less irritating to the bowel.
- Hepatobiliary Conditions: Aloe spp. also stimulates the gall-ducts and has been given in jaundiced conditions.
- Gynecological Conditions: Cook noted that its action on the uterus is associated with that upon the colon; therefore, he used it to promote menstruation powerfully in debilitated states of the uterus. However, he did not consider it an advisable article for regular use in this purpose.

Current Medical Uses:

- Gastrointestinal Conditions: In 1985, Bland reported the effect of orally consumed Aloe vera juice on urinary indican, gastrointestinal pH, stool culture, and stool specific gravity in a semi-controlled study of 10 (five men and five women) healthy human subjects. Urinary indican is used as an indicator of the degree to which either dietary protein is malabsorbed or intestinal bacteria are engaged in putrefactive processes. After one full week of drinking 6 ounces of Aloe vera juice three times daily, urinary indican levels decreased one full unit. This suggests that regular Aloe vera juice consumption can lead to improved protein digestion and assimilation and/or reduced bacterial putrefaction. [115]

  The use of Aloe vera gel internally to treat peptic ulcers was studied in 1963. Twelve patients with X-ray-confirmed duodenal ulcers were given 1 tablespoon of an emulsion of Aloe vera gel in mineral oil once daily. At the end of 1 year, all patients demonstrated complete recovery and no recurrence. Based on experimental evidence, the following factors were thought to be responsible for the effectiveness:

Aloe vera gel inactivates pepsin in a reversible fashion. When the stomach is devoid of food, pepsin is inhibited by Aloe vera gel; however, in the presence of food, pepsin is released and allowed to digest the food. The gel inhibits the release of hydrochloric acid via interference with histamine binding to the parietal cells. Aloe vera gel is an extremely good demulcent which heals and prevents aggravating irritants from reaching the sensitive ulcer.[116]

Likewise, with Heidelberg gastric analysis, Aloe vera juice was shown to increase gastric pH by an average of 1.88 units. This supports the findings of other researchers that Aloe vera gel can inhibit the secretion of hydrochloric acid. [117]

- Immune Conditions: Aloe vera contains a number of compounds necessary for wound healing, including vitamin C, vitamin E and zinc. Unlike many other anti-inflammatory substances, Aloe vera has been shown to stimulate fibroblast and connective tissue formation, thereby promoting wound repair. Aloe appears to stimulate the epidermal growth and repair process, presumably due to its polysaccharides. Mannose-6-phosphate, the major sugar in the Aloe vera gel, may be its most active growth promoting substance.

  Another interesting effect of aloe in wound healing is its ability to counteract the wound healing suppression effects of cortisone. In one study, Aloe vera at doses of 100 and 300mg/kg daily for 4 days blocked the wound healing suppression of hydrocortisone acetate up to 100% using the wound tensile strength assay. The authors suggested this response was due to growth factors present in A. vera masking the wound healing inhibitors.

  While limited, the human research has been promising. For example, one study found Aloe vera gel quite successful in three patients with chronic leg ulcers of 5, 7, and 15 years' duration. The gel was applied to the ulcers on gauze bandages. Rapid reduction in ulcer size was noted in all three subjects and complete resolution occurred in two. [118]
- Pulmonary Conditions: Oral administration of an extract of Aloe vera for 6 months was shown to produce good results in the treatment of asthma in some individuals of various ages. The exception to this was the fact that the Aloe vera extract was not effective at all in patients dependent upon corticosteroids. The mechanism of action is thought to be via restoration of protective mechanisms followed by augmentation of the immune system.The extract used in the study was produced from the supernatant of fresh leaves stored in the dark for 7 days at 4°C. The dosage was 5ml of a 20% solution of the aloe extract in saline twice daily for 24 weeks. Eleven of 27 patients (40%) without corticosteroid dependence reported significant improvement at the study's conclusion.[119]
- Dermatologic Conditions:

  In an open, uncontrolled clinical study, 29 AIDS patients received Aloe vera whole leaf juice, essential fatty acids and nutrients. The Aloe dose was equivalent to 1200 mg acemannan. Karnofsky scores improved in 100% of these patients in 180 days.[120]
- Endocrine Conditions:

  A more recent and larger study (49 men and 23 women) now provides more support for the efficacy of Aloe in combination with glibenclamide in diabetes. While there was no response to glibenclamide alone, the combination was very effective. The patients were provided with 1 tablespoon of Aloe gel and 5mg of glibenclamide twice a day, with 5mg twice a day of glibenclamide serving as the control. After 2 weeks, fasting blood sugar decreased significantly in the treated group, and by day 42 had decreased from an average of 289mg% to a remarkable 148 mg%. While the drop in serum cholesterol was not significant, serum triglycerides decreased from 223mg% to (again remarkable) 128 mg% by day 42. No adverse effects were noted using standard blood chemistries.[121]

Current Research Review:

- **Oncology**
  - **Solid tumors:**[122]
    - Design: Controlled clinical trial
    - Patients: Fifty patients with lung cancer, GI tract tumors, breast cancer or brian glioblastoma
    - Therapy: MLT (pineal indole melatonin),20 mg qd po in the dark plus Aloe vera tincture, 1 ml BID – experimental group. MLT, 20 mg qd po – control group
    - Results: Partial response was achieved in experimental group – 2/24 patients; no response in control group. Stable disease was achieved in experimental group – 12/24 patients; control group – 7/26 patients. Percentage of total non-progressing patients was higher in experimental group. The percent 1-year survival was higher in experimental group as well. The authors suggested that MLT + A. vera extracts may produce some therapeutic benefits in terms of survival and stabilization of disease in patients with advanced solid tumors, for whom no other standard effective therapy is available.
  - **Radiation therapy:**

    Study 1:[123]
    - Design: Two phase III randomized clinical trials: (Trial 1: double-blind placebo-controlled and Trial 2: controlled) clinical trials.
    - Patients: Women receiving breast or chest wall irradiation. Trial 1: One hundred ninety four women. Trial 2: One hundred eight women.
    - Therapy: Aloe vera gel

- Results: Skin dermatitis scores were almost identical on both treatment arms during both of the trials. The conclusion was that the dose and schedule of an aloe vera gel used in this trial does not protect against radiation therapy-induced dermatitis.

Study 2:[124]

- Design: Prospective, randomized controlled blinded clinical trial
- Patients: Patients undergoing radiation therapy.
- Therapy: Aloe vera gel applied topically at various intervals throughout the day in addition to washing with mild non-scented soap.
- Results: At low cumulative dose no difference existed between control and experimental groups. At high cumulative dose (>2,700 cGy), the median time was five weeks prior to any skin changes in the experimental group vs three weeks in the control group. It was suggested that the protective effect of adding aloe to the soap regimen is seen when the cumulative dose of radiation increases over time.

- **Dentistry:**
  - **Aphthous stomatitis:**

    Study 1:[125]

    - Design: Open uncontrolled clinical trial
    - Patients: Thirty one pediatric outpatients, aged 6-14 years, affected by mouth ulcers.
    - Therapy: Bioadhesive patch – Aloe vera hydrogel ("Alovex patch") 3 or less patches qd x 4 days.
    - Results: Seventy seven percent of patients have shown a marked resolution of spontaneous pain, while in the other patients, pain was significantly decreased to mild or moderate level. Symptoms started to decrease within the second day of treatment in 74% of patients.
- **Dermatology:**
  - **Lichen planus:**[126]
    - Design: Case study
    - Patients: Patient with lichen planus
    - Therapy: Aloe vera
    - Results: Successful treatment of lichen planus.
  - **Pressure ulcers:**[127]
    - Design: Randomized controlled clinical trial
    - Patients: Thirty patients with pressure ulcers.
    - Therapy: Amorphous hydrogel dressing derived from the aloe plant (Carrasyn Gel Wound Dressing, Carrington Laboratories, Inc., Irving, TX) – experimental. Moist saline gauze dressing – control.
    - Results: Complete healing of the ulcer occurred in 19 out of 30 subjects within 10 weeks. No difference in complete healing was observed between experimental and control groups. The conclusion is that the acemannan hydrogel dressing is as effective as, but not superior to, a moist saline gauze wound dressing for the treatment of pressure ulcers.
  - **Psoriasis:**[128]
    - Design: Double-blind, placebo-controlled clinical trial.
    - Patients: Sixty patients, 18-50 yo, with slight to moderated chronic plaque-type psoriasis and PASI (psoriasis area and severity index) between 4.8 and 16.7. Mean duration of the disease was 8.5 years.
    - Therapy: Aloe vera extract 0.5% topically TID x 5 days/week for max of 4 weeks.
    - Results: Aloe vera extract cream had cured 25/30 patients (83.3%) vs 2/30 (6.6%) in placebo group. Patients were considered healed when they were showing a progressive reduction of lesions, desquamation followed by decreased erythema, infiltration and lowered PASI score. Aloe vera extract resulted in significant clearing of the psoriatic plaques (328/396 – 82.8%) vs placebo (28/366 – 7.7%). opically applied Aloe vera extract 0.5% in a hydrophilic cream is more effective than placebo, and has not shown toxic or any other objective side-effects.
  - **Burns:**[129]
    - Design: Controlled clinical trial
    - Patients: Twenty-seven patients with partial thickness burn wound
    - Therapy: Aloe vera gel – experimental, Vaseline gauze - control
    - Results: Average time of healing in aloe vera gel area was 11.89 days, and 18.19 days for the Vaseline gauze treated wound, which was found to be statistically significant. Aloe gel was concluded to be effective on partial thickness burn wound.
  - **Wound healing:**[130]
    - Design: Controlled clinical trial
    - Patients: Patients with full-face dermabrasion

        - Therapy: Polyethylene oxide gel dressing saturated with stabilized aloe vera on one half of the face – experimental, polyethylene oxide gel dressing on the other half of the face – control.
        - Results: By 24-48 hours there was a vasoconstriction and decreased edema on the aloe-treated side. By 3rd and 4th days there was less exudates and crusting at the aloe site, and by the 5th to 6th day the re-epithelialization at the aloe site was complete. Overall, wound healing was ~72 hrs faster at the aloe site.
- **Gastroenterology:**
    - **Hepatitis:**[131]
        - Design: Experimental and clinical trial.
        - Patients: Clnical trial part: Thirty-eight patients with chronic hepatitis with positive HBsAg.
        - Therapy: Injection of Aloe vera extract
        - Results: Total effective sGPT-lowering rate was 86.8%.
    - **Constipation:**[132]
        - Design: Randomized double-blind, placebo-controlled clinical trial
        - Patients: Thirty five patients with chronic constipation
        - Therapy: Capsules with celandin-aloevera-psyllium x 28 days.
        - Results: Bowel movements became fore frequent, the stools were softer and laxative dependence was reduced in experimental group compared to the placebo group. Abdominal pain was not reduced in either group.
- **Infectious diseases:**
    - **Tuberculosis:**[133]
        - Design: Clinical trial
        - Patients: One hundred and forty three patients with pulmonary tuberculosis.
        - Therapy: Combination of chemotherapy using desensitizing agents and tissue preparations according to V. P. Filatov (a suspension of placenta tissue an aloe).
        - Results: Therapy had immunomodulating effect. The efficacy amounted to 87% with an account of the general immunity status.
- **Endocrinology:**
    - **Diabetes:**[134]
        - Design: Experimental and clinical trial
        - Patients: Clinical trial part: Five patients with NIDDM.
        - Therapy: Dried sap of the aloe plant – aloes, ½ tsp qd x 4-14 weeks
        - Results: The fasting serum glucose level fell in every patient from a mean of 273+/- 25 to 151 +/- 23 mg/dl with no change in body weight. The authors concluded that aloes contains a hypoglycemic agent which lowers the blood glucose by as yet unknown mechanisms.
- **Cardiology:**
    - **Atheromatous heart disease:**[135]
        - Design: Clinical trial
        - Patients: Five thousand patients with atheromatous heart disease
        - Therapy: Addition of the "Husk of Isabgol" and "Aloe vera" to the diet.
        - Results: Marked reduction in total serum cholesterol, serum triglycerides, fasting and post-prandial blood sugar level in diabetic patients, total lipids and also increase in HDL were noted. Simultaneously the clinical profile of these patients showed reduction in the frequency of anginal attacks and gradually, the drugs, like verapamil, nifedipine, beta-blockers and nitrates,were tapered. The patients, most benefited, were diabetics (without adding any anti-diabetic drug). The exact mechanism of the action of the above two substances is not known, but it appears, that probably they act by their high fiber contents.

Pharmacy:
50-100 ml whole leaf concentrate provide a high concentration of acemannan (Mills and Bone did not state potency)
Juice or gel

Drug Interactions:[136]
Aloe Gel/Juice
- **Glyburide** (positive): see Endoncrine Conditions above
- **Polyethylene oxide** (positive): Aloe gel improved rate of healing of dermabrasion compared to the drug alone.
- **Hydrocortisone** (positive): Aloe gel improves antiinflammatory activity when combined for external use.

Aloe Leaf, dried:
Aloe leaf can increase bowel transit time, reducing the absorption of oral drugs. Overuse can lead to potassium loss, which can increase the toxicity of these drugs:

- **Antiarrhythmic drugs**
- **Cardiac glycosides, Adonis, Convallaria, Urginea, Helleborus, Strophanthus, Digitalis**
- **Thiazide diuretics**
- **Corticosteroids, Glycyrrhiza**

Contraindications: Cook stated that Aloe spp. must not be used when there are piles, tenesmus, or the least irritation of the colon. King added that Aloes should never be given in inflammatory conditions, gastritis, enteritis, to females prone to menorrhagia nor during pregnancy. In regard to the dried leaf, Brinker justifies all of Cooks and King's contraindications as well as renal disorders.

Brinker cites a trial where topical Aloe gel increased healing time in wounds closing by second intention.[137]

Toxicity: Cook observed that their continued use is very likely to bring on piles.

Althea officinalis **Malvaceae**

Common name: Marshmallow

Habitat: Indigenous to Asia and spread westward to southeast Europe and eastward to China. In temperate latitudes Althea is established as a garden plant.[138]

Botanical Description: [139]

- Flower and Fruit: The reddish-white flowers are usually in axillary or terminal clusters. The 6-9 sepals of the epicalyx are fused at the base, pointed and 8-10 mm long. There are 5 sepals, 5 heart-shaped petals, and numerous stamens fused together with the anthers to a column. The ovaries are in a ring. There are numerous styles. The mericarps are smooth and downy. The 5-8 m fruit is disc-like and breaks up into the mericarps, which are downy on the outside and often have fine, branched, and radiating ribs. The seeds are dark-brown, glabrous, kidney-shaped and somewhat compressed.
- Leaves, Stem and Root:

Parts used: Leaves, root (harvested in the Fall)

Constituents:
Root: mucilage (18-35%), pectin, asparagine (2%), tannins.
Leaves: mucilage, flavonoids, coumarin (scopoletin), polyphenolic acids.

Pharmacology:[140]
The active constituents in Marshmallow are large carbohydrate molecules, which make up mucilage. This smooth, slippery substance can soothe and protect irritated mucous membranes.

Medicinal actions: Demulcent, emollient, expectorant.

Traditional Medicinal Use:
According to King:[141]
The root of this plant is demulcent and diuretic (King also describes substitutes at the end of the Althea section). They will be found valuable, in the form of decoction, in diseases of the mucous tissues.

- Gastrointestinal Conditions: Althea is efficacious in *gastro-intestinal irritation and inflammation including acute dysentery,* and *diarrhoea.*
- Genitourinary Conditions: In *strangury, inflammation of the bladder, hematuria, retention of urine*, some forms of *gravel*, and indeed in nearly every affection of the kidney and bladder, their use will be found advantageous. Much use is made of them combined with equal parts of spearmint, in *urinary derangements* including *gonorrhea, vesical catarrh, renal irritation.*
- Pulmonary Conditions: *hoarseness, catarrh, pneumonia,*
- Topical Applications: Externally, marshmallow root is very useful in the form of poultice, to discuss painful, *inflammatory tumors*, and *swellings* of every kind, whether the consequence of *wounds, bruises, burns, scalds,* or *poisons*; and has, when thus applied, had a happy effect in preventing the occurrence of *gangrene*.

Current Medicinal Use:
Both the root and the leaves are demulcent due to their content of mucilage. Although no human studies have been done using althea for treatment of specific diseases the mucilage has well known soothing effects on the mucus membrane. [142, 143]
In fact, Althea is one of the most effective and safest herbal demulcents. The main areas affected by mucilages are the gastrointestinal system, the respiratory system and the urinary system. The roots tend to act most strongly on the G.I. system, while the leaves exert more of their effects on the respiratory and urinary systems. Mucilages promote a soothing, emollient action on the gastrointestinal mucosa, which, by reflex action creates a demulcent action in the respiratory and urinary systems.

- Gastrointestinal Conditions: In the GI system, Althea is used for conditions where there is irritation of the oral, gastric or pharyngeal mucosa . In dyspepsia and GERD, mucilaginous herbs are used to assist on mucus production and protection from hyperacidity when taken before meals and before bed.

  Inflammatory diseased of the digestive tract in general call for these herbs. In regard to food allergy, Althea can be used to assist in reducing inflammation and promote gut healing.[144] Althea is most indicated in inflammatory bowel disease with excessive mucous production. It is also part of Robert's formula. Althea will also promote the healing of gastric ulcers.
- Genitourinary Conditions: Mucilaginous plants are associated with a diuretic effect in Chinese medicine and Althea is one of the most soothing diuretics. In cystitis, Althea can be combined with antiseptic herbs to benefit the bladder wall.[145] Althea can ease the passage of kidney stones.
- Gynecologic Conditions: Althea is a useful addition to douches in all types of vaginitis in order to soothe, promote healing, and

perhaps stimulate local immunity.

- Metabolic Conditions: The mucilages are a class of soluble fiber which is thought to reduce cholesterol biosynthesis: Bacterial in the large intestine metabolize soluble fiber to produce short chain fatty acids. Some of these SCFAs are carried by the portal venous system to the liver where they influence hepatic metabolism to decrease cholesterol biosynthesis.[146]
- Pulmonary Conditions: Acute and chronic bronchitis respond well to Althea as mucilages are used to change an unproductive cough to a productive one.[147] Althea is soothing to the tissues in tonsillitis and sore throat. Additionally, mucilages tend to be expectorating.

  They will allay a spasmodic, non-productive cough, thus promoting more productive expectoration. The German Commission E indicates Althea for irritation of the oral and pharyngeal mucosa and associated dry cough.[148]
- Topical Applications: Externally, Althea makes an excellent poultice for the treatment of inflammations such as boils, ulcers, bruises and abscesses. In addition to the vulnerary, antiinflammatory and drawing properties, the mucilages stimulate phagocytosis (in vitro), and thus most likely exert vulnerary properties.

Pharmacy: Althea and other mucilaginous plants can be taken before meals for digestive problems of the stomach and small intestine, during meals, or after meals in the cases of GER or hiatal hernia. As expectorants, they may be taken at any time and at any frequency.

Infusion:

2-4 gm/cup cold water, infuse overnight as mucilages are best extracted in a cold infusion (place root in cold water, let steep overnight).; 1 cup TID [1 tsp. = 1.4 g] (Alschuler) As the decoction/infusion soon decomposes, or becomes moldy or acid, it should always be made in small quantities, not more than 1 or 2 pints at a time, according to the temperature of the weather. (King)

Tincture:

1:5 25% EtOH; sig 1-4 ml TID; weekly max. dose is 100 ml (Alschuler)

Contraindications: The use of mucilages may be inappropriate in congestive bronchial and catarrhal conditions.[149] Althea may delay the absorption of oral drugs if taken simultaneously (speculative).[150]

Toxicity: Safe herb

Amni visnaga

spasmolytic for angina
10-60 gtt tincture bid (move towards 60 gtt) Mitchell

Anemone pulsatilla (Pulsatilla vulgaris) **Ranunculaceae**

Common name: windflower, pasque flower, pulstatilla, small pasque flower (P. pratensis) P. nigricans

Habitat:

Botanical description: A perennial plant with a stem growing to about 6-8 in. which elongates to about 15-18 in. when fruiting. The basal leaves are pinnately divided into segments of 7-9, which are then divided again into 3-4 segments. The shape is linear-lanceolate. The flowers are solitary, 5-7 cm, compendulate, erect or suberect, and dark purple in color. The fruits are in clusters and are feathered.

Part Used: Herba, whole plant

Constituents:

- Fresh plant- lactone glycoside protoanemonin which can cause blistering and burning of the skin. This dimerizes to anemonin and anemonic acid upon drying, which does not have this effect.
- tannins, resins, triterpenoid saponins, flavone glycosides, pulsatin

Medicinal actions: nervine, anti-spasmodic, alterative, sedative, analgesic, antiinflammatory

Medicinal use:

Mitchell: "cardiac consciousness" or awarness of heart function (3 gtt tid in water); prostate painful and enlarged with Petrosilinum and Hydrastis

- Reproductive Conditions: Pulsatilla is used for nervous exhaustion and dysmenorrhea or amenorrhea in women. It is specifically indicated in women who are intolerant to fatty foods, have cold extremities, a coated tongue and a feeble pulse. Anemone is especially useful for nervous tension and associated spasm in the reproductive tract (male and female). Anemone is indicated when emotional issues (esp. sadness and depression) are held in the pelvis, creating tension, weeping and pain. Anemone combines well with pelvic tonics as it reduces nervous irritation thus facilitating the actions of the tonics. Anemone may exert a progesteronic effect.
- Ophthalmologic Conditions: Anemone is useful externally for conjunctivitis, eye fatigue, and sties.
- Nervous Conditions: Anemone is also useful in headaches secondary to nervous tension, emotional issues, and eye strain.

According to Mills and Bone:[151]

- Gynecologic Conditions: Pulsatilla is used in endometriosis for ovarian and ovulation pain.

According to Weiss:[152]

- Gynecologic Conditions: Pulsatilla is is said to have a beneficial effect on spasms of the genital region. It is not reported to have hormonal effects and use has been considered obsolete. None the less, a number of proprietary preparations are based on the principle of hormonal action and used for functional disorders such as amenorrhea, oligomenorrhea, dysmenorrhea, particularly if there is mental lability and nervous over excitability.
- Ophthalmologic Conditions: The whole herb is used internally to treat inner eye conditions such as irititis, scleritis, diseases of the retina and, above all, grey or senile cataract and glaucoma

According to Scudder:[153] (Scudder appears to prefer the homeopathic preparation) "I value the remedy very highly, and am satisfied from an experience of ten years in its use that I do not overestimate it."

- Nervous Conditions: The principal use of Pulsatilla is to relieve certain, difficult cerebral symptoms that are not relieved by other remedies. In some gynecological diseases, spermatorrhea, prostatorrhoea, heart disease, and some other chronic affections, certain head symptoms play an important part. The patient is nervous, restless, has an active imagination for disease, a fear of impending danger, etc. These symptoms are very unpleasant, and not infrequently prevent the curative action of remedies. Pulsatilla reaches them and gives prompt and certain relief.

  Though Pulsatilla is the remedy for nervousness, it must not be given with any expectation of benefit when the excitement depends upon irritation and determination of blood. In this case it will either exert no influence or it will be unfavorable.
- Male Conditions: Pulsatilla exerts a marked influence upon the reproductive organs of both male and female Some cases of spermatorrhoea will only respond to this remedy. As described above, the unnatural excitement of the mind prevents a curative influence by other remedies.
- Cardiovascular Conditions: In some cases of heart disease, the head symptoms are the most prominent and unpleasant features. Relieve the unpleasant mental sensations and dread of danger, and we have removed a permanent cause of excitement.
- Gynecologic Conditions: Pulsatilla exerts a marked influence upon the reproductive organs of women.

  > "I regard it as decidedly the best emmenagogue, when the suppression is not the result of or attended by irritation and determination of blood; where there is simple suppression from atony or nervous shock, it may be used with confidence."

In male or female it lessens sexual excitement. It does not diminish sexual power, but rather strengthens it by lessening morbid excitement.

In regard to Anemone nemorosa. (Wood anemone: Wind flower.). It influences the functions of waste and repair, but acts directly upon the nervous system. Belonging to the same family as the Pulsatilla, its action will be somewhat analogous.

According to King:

Specific Indications and Uses.—Nervousness and despondency, sadness, unnatural fear, tendency to weep, morbid mental excitement, marked depression of spirits; pain, with debility, nervousness, headache, not dependent on determination of blood to the head; insomnia, from nervous exhaustion; neuralgia in anemic, debilitated subjects; pasty, white, or creamy, thick coating upon the tongue, with greasy taste; stomach disorders from indulgence in fats and pastries; thick, bland, inoffensive discharges from mucous surfaces; alternating diarrhoea and constipation, with venous congestion; amenorrhoea and dysmenorrhoea, with gloomy mentality and chilliness; severe pains in the ear, non-inflammatory and evidently neuralgic; pain from exposure to wind; jumping toothache, from abscess near the dental pulp; sties.

Pulsatilla forms an important remedy with the Eclectic physicians as well as with the Homeopaths, who make extensive use of it. According to the late Prof. J. M. Scudder, M. D., who used it largely in his practice, its most important use is to allay irritation of the nervous system in persons of feeble health, thus giving sleep and rest, preventing unnecessary expenditure of nerve force, and, by this means, facilitating the action of tonics and restoratives. In feeble women, and men who have become nervous from sedentary habits or mental over-exertion, as well as in the nervousness and restlessness of masturbators, or persons addicted to the excessive use of tobacco, he has found it very certain in its action. It is the remedy for nervous women, when there is debility and faulty nutrition of the nerve centers.

In medicinal doses, pulsatilla increases the power and regulates the action of the heart, and gives a better character to the pulse rate, particularly slowing the irritable, rapid and feeble pulse due tonervous depression. It improves the sympathetic system and cerebral functions, and especially strengthens sympathetic innervation, this action being very marked in troubles of the reproductive organs of male and female.

Pulsatilla is a remedy of wide applicability, but more particularly for those conditions in which the mind is a prominent factor. A gloomy mentality, a state of nerve depression and unrest, a disposition to brood over real or imagined trouble, a tendency to look on the dark side of life, sadness, mild restlessness, and a state of mental unrest generally denominated in broad terms "nervousness," are factors in the condition of the patient requiring pulsatilla. A pulsatilla patient weeps easily, and the mind is inclined to wander—to be unsettled. The pulse requiring pulsatilla is weak, soft, and open, and the tissues have a tendency to dryness (except when the mucous tissues are discharging a thick, bland material), and, about the orbits the parts appear contracted, sunken, and dark in color. The whole countenance and movements of the body depict sadness, moroseness,despondency, and lack of tone. Hysteria of the mild and weeping form may be a symptom. The whole condition is one of nervous depression, the nutrition of the nerve centers are at fault. With such symptoms, pulsatilla may be confidently prescribed in the conditions and disorders enumerated in this article. Pulsatilla may be given to produce sleep, when there is great exhaustion and opiates are inadmissible. If the insomnia depends upon determination of blood to the brain, pulsatilla will not relieve, but when due to nervous exhaustion it is a remedy to give rest, after which sleep obtains. Where sleep is disturbed by unpleasant dreams, and the patient awakens sad and languid, pulsatilla should be given. Pulsatilla has a large field in troubles incident to the reproductive organs, of both sexes. As an emmenagogue, it serves a useful purpose in amenorrhoea in nervous and anemic subjects, with chilliness a prominent symptom. When menstruation is suppressed, tardy or scanty from taking cold, or from emotional causes, pulsatilla is the remedy. In dysmenorrhoea, not due to mechanical causes, and with the above-named nervous symptoms, no remedy is more effective. Leucorrhoea, with a free, thick, milky, or yellow, bland discharge and pain in the loins, and particularly in scrofulous individuals, calls for pulsatilla. It is a remedy for mild forms of hysteria, where the patient is weak and weeps easily, has fears of impending danger, and passes large quantities of clear, limpid urine, and menstruation is suppressed.

The long-continued use of pulsatilla as an intercurrent remedy, is accredited with curative effects in uterine colic, but it is of no value during an attack. Pulsatilla frequently proves a good remedy in ovaritis and ovaralgia with tensive, tearing pain. Sluggish, ineffectual, and weak labor-pains are sometimes remedied by this drug. It is frequently a remedy for pain, when dependent on or associated with debility, and sometimes when due to acute inflammation. It is a leading remedy in epididymitis and orchitis, whether due to gonorrhoeal infection or to metastasis from mumps. The dark-red, congested, enlarged, and sensitive testicle indicates it. It relieves the pains of orchialgia, and subdues mammary swelling from the metastasis of mumps. Pulsatilla increases sexual power, but lessens morbid sexual excitement. It is especially valuable in relieving urethral irritation and consequent spermatorrhoea and prostatorrhoea. In these troubles it overcomes the nervous apprehensions so frequently a troublesome feature. It also alleviates the nervous irritability accompanying or produced by varicocele. In gonorrhoea, particularly of the chronic type, pulsatilla is of value, when the urethral membrane is swollen. Pulsatilla has been used by some for the relief of hydrocele, but for this affection we possess better remedies. Many unpleasant conditions of the urinary apparatus are relieved by pulsatilla, as frequent but ineffectual attempts at urination, the bladder giving a sensation as if bloated; dribbling of urine from movement, the dysuria of pregnancy, and in involuntary micturition from colds or from nervous debility.

Pulsatilla frequently proves a useful remedy in headache of various types. It relieves the frontal headache from nasal catarrh, nervous headache, particularly when due to gastric disturbances, with greasy taste, menstrual headache, with chilliness and suppressed menses, bilious and gastric headaches, of a dull and heavy character, with greasy taste and nausea, and headaches due to uterine irregularities

or to a rheumatic diathesis. These headaches are all of anemic character—the opposite of those relieved by gelsemium. Though ordinarily not a remedy for acute inflammations (contraindicated in gastro-intestinal inflammation), there are some conditions where small doses of pulsatilla are beneficial when the usual symptoms calling for the drug are present. These conditions are acute inflammation of the nose, fauces, larynx, or bronchiae. It is especially effective in the secondary stage of acute nasal catarrh, when the naso-pharynx is affected and there is a sense of rawness and moisture, and an abundant discharge of thick, yellow, bland, inoffensive mucus or muco-pus. Pulsatilla frequently serves a good purpose in asthma superinduced by pregnancy, or by suppressed menses, and it favorably influences whooping-cough in properly selected
cases. So-called "stomach cough" is frequently cured by pulsatilla.
Pulsatilla should be remembered as a remedy of much value to control the catarrhal symptoms of the exanthemata; it also controls the irritability frequently accompanying these disorders. In measles, it has done good service in checking the coryza and profuse lachrymation, as well as the dry, tight, painful cough, and when retrocession of the eruption has taken place, it has reversed this unpleasant condition. It relieves the irritable condition in varicella. Pulsatilla is very efficient in real and imaginary cardiac affections. It has proved useful in cardiac hypertrophy and in dilatation of the venous heart. It is especially effective in functional heart disorders with giddiness, imperfect voluntary motion, impaired vision, and with a symptom described as a sense of pressure over the larynx and trachea, with imperfect respiratory movement, and sense of impending danger; the symptoms just preceding are those not unfrequently associated with functional heart disease, dyspepsia, uterine disease, or over-excitation of the sexual system, and are generally very unpleasant and annoying. It often relieves that form of venous congestion which stops short of inflammation, as in threatened ovaritis, orchitis, varicocele, and crural phlebitis.
Varicocele and other varicoses are frequently improved by its administration with other indicated remedies. Its chief advantage, outside of some control over the venous structure, is its relief of the nervous complications. It has been used to good advantage for the relief of hemorrhoids.
Constipation in the hysterical female yields to nux vomica and pulsatilla, and the latter has a pleasing action in some forms of indigestion and dyspepsia. These cases are those in which there is a thick, creamy paste upon the tongue and a greasy taste. Such troubles are frequently brought about by indulgence in pastries and fatty food. Pain is not marked, but there is pyrosis and greasy eructations, gastric distension, uneasy gnawing sensations in the stomach, and chilliness may be a pronounced symptom. The patient is nervous, sad, and may have a soft, yellow diarrhoea. For such cases pulsatilla is an excellent remedy. It is also said
to relieve alternating constipation and diarrhoea with venous congestion. Pulsatilla is a prompt and decisive agent in earache, brought on by cold, wet, and exposure to winds. There is an absence of fever, the pulse is open and soft, the child sobs, the face is pale, the tissues full and waxen, the pain is intense and frequently paroxysmal and tearing in character—evidently a neuralgic condition, for physical signs of local disturbance are seldom observed. In purulent otitis media, with thick, yellow, bland discharge, and impaired hearing, and tinnitus aurium, pulsatilla is the indicated remedy.
One of the earliest uses of this plant was for the relief of "amaurosis, cataract, and opacity of the cornea," conditions in which the reputed value of pulsatilla is very much overrated. There is a condition, sometimes known as "nervous blindness," which has been benefited by pulsatilla, and this is probably the condition formerly referred to under the elastic term amaurosis. Pulsatilla
stands out prominently as a remedy for hordeolum or "stye." It is also a prompt remedy when the conjunctiva is hyperemic and the vision weakened, especially after reading, or from sexual abuse or sexual excesses, and in profuse lachrymation from exposure to winds or when in the wind. It should be used locally (gtt. x to aqua ij) and also given internally in small doses. In chronic conjunctivitis, with bland, yellow discharges, in scrofulous individuals, or due to the exanthemata, and in ophthalmia neonatorum, with like discharge, pulsatilla has been used with signal success. It relieves deep-seated, heavy pain in the globe of the eye, and has been recommended in inflammation of the lachrymal sac. Störck, who was one of the first to use pulsatilla, considered it useful in secondary syphilis, and in some forms of cutaneous diseases, as well as in amaurosis and other ocular affections.
This drug has been used with much success in rheumatism, when the pains were shifting and relieved by cold and aggravated by warmth. Depression of spirits is here a prominent feature. It has also aided in restoring the flow of milk in agalactia in nervous and fear-depressed women, whose breasts were painful and swollen. Prof. W. E. Bloyer emphasizes its value in "jerking" or "jumping" toothache, usually due to the formation of a pus cavity near the nerve. He applied the full strength specific pulsatilla, or diluted one-half with water, besides giving the drug internally. He also recommends this treatment as "especially useful in inflammations caused by dead teeth, and the inflammatory, painful, and unpleasant conditions of the pulp cavity in those in which the nerve has been destroyed" (Ec. Med. Jour., 1895, p. 248). The dose of specific pulsatilla is from a fraction of a drop to 10 drops, administered in water; of the fluid extract, from 1 to 15 drops; of the extract, from 1/6 to 1 grain; of anemonin, 1/20 to ¼ grain.

Pharmacy: According to Scudder, use of the German tincture prepared from the fresh herb according to the Homeopathic pharmacy is indicated. Preparations made from the imported dried herb will not give work effectively. Michael Moore agrees with this and only recommends the tincture prepared from fresh herb.

Infusion: 1/2-1 tsp. dried herb / cup water; sig 1 cup BID (Dr. Alschuler)
Tincture
1:10 40% alcohol; sig .3-1 ml TID, maximum weekly dose = 21 ml
j.to ij.; Water, iv. A teaspoonful every four hours. (Scudder)
Externally as eyewash

Proprietary combinations:

Femisana (Holz): Vitex, Chelidonium, Cimicfuga, Pulsatilla

Feminon (Redel): Pulsatilla, Cimicifuga, Vitex

For eye conditions:

50 g each powdered Pulsatilla herb and extract. Make up 75 pills, sig 1-3 tid (Weiss)

Contraindications: Anemone is contraindicated in cases of gastro-intestinal inflammation. Brinker lists contraindications during pregnancy due to its uterine stimulating effect (in vitro and in animals() and in nursing mothers because of gastrointestinal irritant effect.[154]

Toxicity: Anemonin is a mucous membrane irritant. Use may cause a burning sensation in mouth and throat, colic, abdominal pain, nausea and vomiting, bloody diarrhea, slow pulse and cardiac arrhythmia. External use can cause skin irritation or contact dermatitis.[155]

Adapted from King: Topically applied, the fresh plant of pulsatilla is irritant, and, if kept long in contact with the skin, may produce vesication. When chewed, it produces a benumbing sensation and tingling formication, somewhat like that produced by aconite or prickly ash. Taken internally in overdoses, it acts as a gastric irritant, producing a sense of rawness, burning, pain in stomach, with endeavors to vomit, all accompanied with marked prostration. A case of poisoning with these symptoms is on record in the Medical Gleaner, Vol. IV, p. 173. A sense of constriction and tightness of the chest, with chilliness, marked weakness, and some congestion, has been produced by large doses. Full doses depress the action of the heart, lower arterial tension, and reduce temperature. Sensory and motor paralyses have followed large doses of pulsatilla, while toxic doses may produce mydriasis, stupor, coma, and convulsions.

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[151] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 244

[152] Weiss RF. Herbal Medicine, 6th ed. Hippokrates Verlag GmbH 1996. p. 319, 340

[153] Scudder J. Specific Medications and Specific Medicines.

[154] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 114

[155] Brinker, p 147

Angelica archangelica

Umbelliferae

Common name: European angelica (American angelica is A. atropurpurea)

Habitat:

Botanical description: The roots are long and spindle-shaped, thick and fleshy. It is a tall plant (2 m.) with large, serrated leaves, with smaller leaflets in groups of three, and globular umbels of small green flowers. It grows by the sea and at high mountainous altitudes.

Parts used: Root, seeds, leaves

Historical use: The historical and most wide-spread use of Angelica archangelica is as a flavouring agent. The seeds are used to flavor liqueurs such as gin and Vermouth. The stems are candied.

Constituents: Volatile oil (root and seeds, 0.3-1%), macrocyclic lactones, phthalates, coumarins, sugars, plant acids, flavonoids, sterols.

Medicinal actions: Expectorant, diaphoretic, carminative, diuretic, aromatic tonic, stimulant, emetic

Medicinal use:

- Pulmonary Conditions: Medicinally, the root and seeds are stimulating expectorants. Angelica archangelica is also a diaphoretic and thus is particularly useful in coughs accompanied by a fever.
- Gastrointestinal Conditions: Angelica archangelica is also an effective carminative. The root contains bitter principles, which make this plant an aromatic tonic. A warm infusion is best. This plant is not well-indicated in inflammatory conditions of the gastrointestinal tract. The seeds possess the same properties but are more diaphoretic than the root.
- Genitourinary Conditions: The seed will also promote diuresis, has demonstrated anti-inflammatory, bacteriostatic and fungistatic properties and thus may be useful in cystitis.[156,157]

According to Mills and Bone:[158]

- Inflammatory Conditions: Angelica has been used topically as an anti-inflammatory. Congestive chronic infections and inflammatory conditions respond well to Angelica and other aromatics. It is a sustaining, warming herb that has also been utilized as a convalescent aid in recovering from febrile disease. In turn, Angelica can also be utilized to encourage a therapeutic fever.
- Gastrointestinal Conditions: Angelica is considered an aromatic herb. In general, aromatics are indicated for gastrointestinal complaints such as colic, flatulence, irritable bowel disease, congestive dyspepsia and sluggish digestion and metabolism in general. Angelica increases gastric acidity.
- Pulmonary Conditions: Angelica, as well as other aromatics, can be utilized in catarrhal and bronchial congestion. These herbs have a spasmolytic effect on bronchial smooth muscle. Angelica is a warming expectorant.

According to the Textbook of Natural Medicine:[159]

- Immune Conditions: The oil of Angelica has exhibited significant antifungal and antihelminthic properties, but virtually no antibacterial

activity.

According to Weiss:[160]

- Gastrointestinal Conditions: Angelica is frequently used in bitter formulas for its aromatic bitter qualities. The volatile oil is carminative and functions similarly to Artemesia absinthium. Yet, Weiss favors other carminative such as Carum, Foeniculum and Anisum for clinical use.
- Topical Applications: Angelica oil is used externally with camphor for rheumatic conditions.

According to King:[161]

Angelica has been applied as fomentation in *tumefactions and swellings*, and given internally in *enteric fever* and other *typhoid states, chronic rheumatic complaints, gout and malarial intermittents*. As a stimulant to the respiratory mucous surfaces, it has been serviceable in *chronic bronchitis*.

According to Cook:[162]

- Gastrointestinal Conditions: The roots may be chewed or used in warm infusion and prove diffusively stimulating and relaxing to the stomach and skin, with a slight influence upon the kidneys. Thy promptly relieve flatulence and colic. The seeds posses the same properties, but are rather more diaphoretic. The Compounded Tincture of Angelica, Carminative drops (see below) can be

used for all forms of flatulence, colic and abdominal pains not connected with inflammation. Equal parts of these drops and the Neutralizing Cordial make an admirable mixture in tormina with sour stomach and a tendency to diarrhea, but not in dysentery.

- Gynecologic Conditions: A warm decoction of them, used freely during an evening, is a popular remedy for retained placenta and suppression of the menses suddenly following cold and is deserving of use if employed early.
- Pulmonary Conditions: A strong decoction has been asserted to cure chills, if suitable cathartics have first been used; at the tincture for spasmodic coughs. It can be used profitably as an adjunct to antispasmodic nervines.

Pharmacy: Powdered root or seed:

5-30 grains (1 g ~ 16 grains) (King)

Decoction of the root and/or seed:

decoct 1 tsp. for 5 min.; sig 1 cup TID (Alschuler) Root can be decocted longer, 15-30 min, but seed should be shorter to avoid bitter taste (Dipasquale)

1 oz. per pint of water, sig ½ to 1 wineglassful (King)

1 oz. root per 1 pint water, infuse in a covered vessel; sig 1-2 oz. as needed (Cook)

1:5 tincture:

2-5 ml TID (Alschuler)

Compounded Tincture of Angelica, Carminative drops: Angelica root (4 oz.), Dioscorea root (2 oz.), Leonurus, Coriander seed, Anisum seed, Dill seed (1 oz. each). Crush the whole and macerate in forty oz. of thirty percent alcohol for 10 days. Apply strong pressure and add half a pound of white sugar to the clear liquid. Sig ½-1 tsp. in water q hr or more for adults. (King)

Contraindications: Aromatics, in general, are not to be used in patients with gastroesophageal reflux as the volatile oils relax the esophageal sphincter.

Angelica is not proper in inflamed conditions.[163] For example, it is to be avoided with peptic ulcers due to its stimulation of gastric acid secretion (empirical).[164]

Brinker states an empirical contraindication is pregnancy due to its emmenagogue effect.

Toxicity: Phototoxicity may occur given the content of furanocoumarins although this effect may be utilized in the treatment of psoriasis and vitiligo (empirical). [165]

Angelica sinensis

Umbelliferae

Common name: Dong quai (Japanese angelica is A. acutiloba)

Habitat: Dong quai is native to China, Korea and Japan.

Botanical description: It grows to about .5-1 m high. The inferior leaves are tripinate and the superior leaves are pinnate on long, sheathed petioles. There are 10-14 umbels in irregular rays each with 12-36 white flowers. The root is greyish brown and wrinkled looking.

Part used: root (different properties are ascribed to the head, body and tail of the root.)

Historical use:

Energetics:
Taste: sweet, acrid, bitter, warm
Meridians entered: Heart, Spleen, Liver (Mills and Bone include the Lung)

- ☯ Tonifies the blood and regulates menses
- ☯ Invigorates harmonizes the blood
- ☯ Moistens the intestines: dry stool from xue xu

Constituents: Volatile oil (0.4-0.7 %), phytosterols, ferulic acid, coumarins, flavonoids

Pharmacology: Dihydropyranocoumarins and dihydrofruanocoumarins form Umbelliferous plants have been shown to possess significant coronary vasodilatory, spasmolytic and c-AMP phosphodiesterase inhibiting activity.[166] Apparently, the mechanism of action is largely attributed to calcium channel antagonism. Angelica sinensis has been shown to depress stimulation of β-2-adrenergic receptors thereby reducing experimental pulmonary hypertension.[167] It can prolong the refractory period, correct experimental atrial fibrillation and is a negative inotropic in the heart as well. [168] Ferulic acid is inhibits platelet aggregation and serotonin release.[3]

Angelica sinensis has been shown to depress stimulation of β-2-adrenergic receptors thereby reducing experimental pulmonary hypertension.[169] It can prolong the refractory period, correct experimental atrial fibrillation and is a negative inotropic in the heart as well. [170] Ferulic acid is inhibits platelet aggregation and serotonin release.[3]

According to the Textbook of Natural Medicine:

In the smooth muscle of visceral organs, Angelic essential oil has demonstrated a relaxing action while the water extract stimulates contraction initially followed by prolonged relaxation.

In regard to the immune system, Chinese and Japanese angelica, selectively inhibit the production of IgE. Coumarin compounds are immune-enhancing in both healthy and cancer patients, stimulating macrophages and phagocytosis. Possibly, this activity may prevent tumor growth and metastasis. The coumarins and polysaccharides of the water extract have immune modulating activity: they are B-lymphocyte mitogens, stimulate IFN production and activate both complement pathways. Chinese angelica also increases TNF production. Interestingly, Chinese angelica appears to have antibacterial activity against both Gram positive and negative organisms while Japanese angelica does not, yet this effect is considered less than desired for an antimicrobial agent.

Chinese and Japanese angelica contain highly active phytoestrogens and demonstrated uterine tonic activity. H1 and α-adrenergic receptors have been theorized to be the target sites for the uterine stimulant effects. [171]

Medicinal actions:

- uterine stimulant, emmenagogue, estrogenic, progesteronic, fetal relaxant
- hepatorestroative/protective, nervous sedative, cardiovascular relaxant, antiplatelet aggregant, demulcent laxative, antiarrhythmic immunostimulant, WBC stimulant, antitumoral, anti-inflammatory

Medicinal uses:

According to Mills and Bone:[172]

- Genitourinary Conditions: Dong quai may be of benefit in the treatment of nephrotic syndrome.[173]
- Gynecologic Conditions:[174] Dong quai is a uterine spasmolytic and uterine stimulant. Some experiments have shown uterine stimulation while others have demonstrated relaxation or coordination of uterine contractions. It appears that the state of uterine tone determine the action.

Dong quai regulates menstruation. Dong quai relieves dysmenorrhea and chronic pelvic pain, including in endometriosis. For menopause, there is not much clinical or traditional evidence supporting its use it does not have estrogenic activity. However, its tonic effect may be beneficial.

Difficult conception marked by excessive anovulatory cycles indicates Dong quai. A study of infertility due to tubal occlusion demonstrated beneficial results with uterine irrigation of the extract.[175]

- Gastrointestinal Conditions: Dong quai relieves constipation by lubricating the bowels
- Cardiovascular Conditions: Animal studies have demonstrated prevention of coronary atherosclerosis.[3] Other effects include reduction of blood pressure, dilation of the coronary vessels and reduced serum cholesterol. It also has a hematopoietic effect on bone marrow.[176] When combined with Astragalus it has improved thrombocytopenic purpura in rabbits. For cardiovascular conditions it is often combined with Dan shen (Codonopsis)
- Hepatobiliary Conditions: Dong quai protects the liver and is indicated
- Immune Conditions: Dong quai appears to have a weak stimulatory effect on phagocytosis and lymphocyte proliferation but inhibits antibody production. It can mildly counter the immunosuppressive effects of hydrocortisone but not as well as Astragalus.

According to Tai Lahans:[177]

- Cardiovascular Conditions: Macrocytic anemia responds to Dong quai as it is high in folic acid and B12. It decreases atherosclerotic plaque formation and is utilized in aortitis coronary artery disease and stroke.
- Endocrine Conditions: For hyperthyroidism Dong quai has been injected into the thyroid.
- Gastrointestinal Conditions: Irritable bowel syndrome and dry constipation respond well to Dong quai.

Pharmacy: Dong quai may be used long term.
decoction: 3-15 mg dried radix qd
1:2 fluid extract: 4-8 ml qd

Contraindications: Caution is advised with use during diarrhea and damp obstruction in lower jiao. Dong quai should not be used in yin deficiency with heat signs.

Given its uterine stimulating effect, caution is advised during pregnancy with abstinence during the early stages.[178]

It should be avoided in hemorrhagic conditions and acute viral infections.

Toxicity:

Apium graveolens

Umbelliferaceae

Common name: celery

Habitat:

Botanical Description:

Parts Used: Seeds

Energetics:[179] A bit bitter and sweet, neutral, moist

Constituents:

- Volatile oils (thought to be main active constituents):
  - 2-3%: apiol, limonene, selinene.[180]
  - Perillyl alcohol (POH). (Also found in small concentrations in the essential oils of lavendin, peppermint, spearmint, sage, cherries, cranberries, perilla (Perilla frutescens), lemongrass, wild bergamot, gingergrass, savin, caraway, and celery seeds.)[181]
- Flavonoids (apigenin, isoquercetrin)
- Furocoumarin glucosides
- Alkaloids

Pharmacology (the following are animal trials, unless noted otherwise)**:**

- Chemopreventative:
  - Perillyl alcohol: chemotherapeutic agent for pancreatic, breast, and liver cancer; chemopreventive agent for skin, lung, and intestinal cancer. It prevents inhibition of apoptosis, and may be protective against colon cancer and other cancers by enhancing the detoxification of carcinogens by the liver.
    - Latest research: Phase I trials have failed to show a substantial therapeutic effect in humans, but phase II trials are presently being conducted for further evaluation. Future phase II trials will take into account the short half-life of the perillyl alcohol metabolites and will dose the drug more frequently at 1.6 g/m2/dose. This way, the dosing schedule will be more similar to animal studies and hopefully better results will be achieved. [182]
  - Limonene, a monoterpene which yields the same metabolites as perillyl alcohol, has been shown to increase the urinary excretion of the carcinogen DMBA and its metabolites by 2.3-fold compared to control rats. When fed at a 5-percent diet two weeks before DMBA administration, limonene prevents DMBA from interacting with DNA by 50 percent when compared to controls. A 5-percent limonene diet can increase cytochrome P450 family members CYP2B and 2C, and increase epoxide hydratase, which are both members of the Phase I liver detoxification system, and can induce Phase II detoxification systems. [183]
- Hepatoprotective effects:
  - The different extracts of Apium graveolens were tested for their hepatoprotective activity against induced hepatotoxicity in rats. The degree of protection was measured by using biochemical parameters like serum transaminases (SGOT and SGPT), alkaline phosphatase, total protein and albumin. The methanolic extracts showed significant hepatoprotective activity comparable with standard drug silymarin.[184]
- Lipid lowering effects:
  - Two groups of rats were fed a high fat diet for eight weeks to induce hyperlipidemia. One group was supplemented with aqueous celery extract in the diet while the other group served as control. At the end of the experiment, a significant reduction was found in the serum total cholesterol (TC), low density lipoprotein cholesterol (LDL-C), and triglyceride (TG) concentrations in the celery-treated rats. However, the concentration of hepatic TG was significantly higher in the celery-treated group than in the control group. Hepatic triacylglycerol lipase (HL) activity was found to be significantly lower in the celery-treated rats while the reverse was observed for the hepatic microsomal P450 content. [185]
- Relaxant:
  - Apigenin inhibited the contraction of aortic rings caused by cumulative concentrations of calcium (0.03-3 mM) in high potassium (60 mM) medium, with an IC50 of about 48 microM. Apigenin relaxes rat thoracic aorta mainly by suppressing the Ca2+ influx through both voltage- and receptor-operated calcium channels.[186]

Medicinal actions: Diuretic, Sedative nervine, Carminative, Anti-inflammatory

Medicinal use:

- Nervous Conditions: The alkaloids in Apium appear to have depressant, traqnquilizing effects on the CNS. These actions are useful in nervous restlessness and spasmodic tension.
- Musculoskeletal Conditions: Apium is a diuretic particularly suited to arthritic conditions, including those of an autoimmune nature. Apium is indicated in gout as well as Urtica dioica and Betula pendula.[187]
- Genitourinary Conditions: Through stimulating acidic secretion, most notably uric acid, Apium is an alkalinizing herb to the body in general.[188] Apium is most indicated as a diuretic for *chronic* deficient states with sluggish kidney function. Celery seed stimulates circulation to and through the kidneys by mildly irritating them. Apium is also strengthening to bladder epithelium, especially when used in conjunction with *Equisteum spp*..
- Reproductive Conditions: Given the alkalinizing effect of Apium, it can be utilized adjunctively in an alkalinizing regimen for over acidic cervical mucous which may contribute to conception difficutly.[189]

Pharmacy:

- The fresh seed juice or tea is best. Up to 90 ml of juice/day
- Infusion: 1-4 g/day [1 tsp. = 1 g]

Contraindications:

- Due to the irritating effect of the volatile oils, Apium is contraindicated in acute kidney conditions. The volatile oils have an empirical emmenogogue and possible abortifacient effect and should be avoided during pregnancy. Emperical evidence also suggests increased photosensitivity due to the furanocoumarins.[190]
- Apium has high sodium; monitor those with hypertension or fluid retention.

Toxicity:

- Celery pickers can develop photodermatitis after handling celery infected with fungus, which induces the celery to produce high levels of psoralens.[191]

Arctium lappa

Asteraceae

Common name: Burdock, Gobo

Habitat: Arctium is native to Europe, grows in temperate zones on this continent and in Asia. It prefers moist soil. Arctium can be seen growing by roadsides and in abandoned lots.

Botanical description: This is a thistle plant. A biennial root gives rise to the stem which grows 3-4 feet tall. Large, wavy dull pale green leaves with a grey down on their undersurfaces are big at the base and small near the top. The tubular flowers are purple, pale pink, or white and globular and are enclosed in a burr.

Historical uses: Europeans have long used this plant as food. The roots were dried and used in soups while the green leaves were cooked as well. In Japan, Gobo has been eaten for about 1,000 years. It was brought into their country by Buddhist monks. The Japanese people traditionally used Gobo root for constipation, syphilis, mercury poisoning, paralysis, to stimulate blood circulation, and as a diaphoretic. They considered the leaves good for external elimination of pain over broken bones, for skin burns, and for rash. The seeds were used to eliminate toxins, to control fever, and as a diuretic. Today, the average Japanese consumer still buys Gobo leaves, believing this herb to be a source of strength and endurance. A. lappa has been cultivated in European gardens for centuries. During the two World Wars, faced with severe shortages of medicines, people throughout Europe had to rely on herbs to treat casualties. A lappa was one of the herbs employed for the treatment of wounds. Predating the World Wars, the Pilgrims left records indicating that Burdock was one of the herbs they carefully safeguarded on their journey to the New World. Native Americans were already using a native species. Medicine men of several N. American tribes drank a bitter brew of A. lappa to concentrate better and to prolong the image of love in their minds. Medicine man, J.I. Lighthall, carried on the tradition of his people by using A. lappa as a defense against kidney ailments, to ease the passage of urine, and to reduce burning with urination. About 100 years after the Pilgrims set foot on the N. American continent, Paracelsus was recommending A. lappa as a hair-growing agent.

Parts used: Root, seeds, leaves
The seeds are collected in the summer before the flower heads are formed. The seeds need to be stored in a dry and cool place. The leaves are collected before the plant blossoms, and stored in a dry, cool place or eaten right away. The root should be dug in July from the first year plant (identifiable by its lack of blossoms or burrs) and stored in a dark, cool, dry place. According to Cook, the seeds possess the same properties as the root but tend to act more quickly.

Constituents (root unless otherwise stated): [192]

- *Small amount of volatile oil of very complex make-up:* including, among others, phenylacetaldehyde, benzaldehyde, 2-alkyl-3-methoxy-pyrazines*Sesquiterpene lactones*
- *Polyynes:* chief components trideca-1,11-dien-3,5,7,9-tetrain
- *Caffeic acid derivatives:* including chlorogenic acid, isochlorogenic acid
- *Polysaccharides:* inulin, up to 50% (fructosan), mucilages (xyloglucans, acidic xylans)
- The seeds contain 15-30% fixed oils, a bitter glycoside (arctiin) and chlorogenic acid.
- The leaves contain arctiol, fukinone, and taraxasterol.

Pharmacology:

Burdock root contains high amounts of inulin and mucilage. This may explain its soothing effects on the gastrointestinal tract. Bitter constituents in the root may also explain the traditional use of burdock to improve digestion. Additionally, burdock has been shown to reduce liver damage in animal studies.[4] This has not been confirmed in human studies, however.

Arctium is considered to be a desmutagen. Arctium stimulates white blood cells, this action being due to the polyacetylenes. The stimulation of WBCs gives Arctium an anti-microbial effect which makes it useful for treating acne and boils, and together with its diuretic effect, for treating cystitis.

Medicinal actions: gentle alterative, antimutagenic, diuretic, diaphoretic, aperient, immunostimulatory, anti-inflammatory, bitter (relaxant and demulcent with a limited amount of tonic property- Cook)

Energetics: Sweet, cool

Traditional Medicinal Use:
Specifically, Arctium is an alterative. Alteratives is an herb which acts in a gentle and tonifying way to "improve the quality of the blood, increase the appetite, promote digestion, and accelerate the processes of elimination." [Felter, p.82] Alteratives break down and remove toxins from the body. The mechanism of action of alteratives is largely unknown. It is presumed that they act through a combination of effects including: choleretic, cholagogue, enhancing detoxification pathways in the liver, increasing cellular metabolism, laxative, nerve

tonic, and stimulation of glandular functioning. It acts slowly and mildly upon several of the secreting organs, as the kidneys, skin, and bowels.[193]
Ellingwood states that Arctium has similar properties to Rumex, being an alterative and affecting the skin and mucous membranes. As a glandular alterative, Arctium is indicated in chronic glandular enlargements.

Specific Indications and Uses.—Feeble cutaneous circulation; scaly, dry eruptions; impaired nutrition of skin; urinary irritation; psoriasis.[194]

- Dermatological Conditions: Skin diseases, depending more so on a deficient state of the cutaneous tissues and less upon the state of the blood itself, are conditions in which Arctium was indicated. In cases requiring burdock seeds the cutaneous circulation is feeble or there is an irritable condition of the system.[195,196] The seeds stimulate the sebaceous and sweat glands restoring the natural oiliness and diaphoretic characteristics to the skin.[197]
- Gastrointestinal Conditions: To the Eclectics, Arctium was valuable in catarrhal and aphthous ulcerations of the digestive tract. Ellingwood stated that it promotes normal gastric secretion while restoring ulcerative mucous membranes of the GI tract. Cook claimed that the seed seemed to abate nausea caused by Lobelia.[198]
- Genitourinary Conditions: King recommended the seeds as very efficient diuretic alterative. He described direct action of the seeds on the urinary tract, relieving irritation, increasing renal activity, assisting in eliminating morbid products and removal of worn-out tissues in chronic disorders.[199] They increase the flow of urine; and are very effective in bladder irritation and urine with mucous and grayish sediments.[200]
- Inflammatory Conditions: Rheumatism, without structural alteration, was said to be benefited by the seeds.
- Ophthalmologic Conditions: Arctium has been used to remove boils and styes on the eyelids.[201]
- Pulmonary Conditions: Arctium relieves bronchopulmonic irritation and cough, particularly when a cachectic condition of the blood is present and where an alterative is indicated.[202]
- Topical Applications: The bruised leaves were applied directly to boils, as a "drawing" and cleansing fomentation.[203]

Current Medicinal Use: Burdock is considered a food. Most medicinal foods tend to be tonifying in their effect as is Arctium. Preparations of burdock root are used for ailments and complaints of the gastrointestinal tract, as a diaphoretic and diuretic, and for blood purifying. It may possibly be used in the treatment of cancer. The claimed efficacies have not been documented. [204, 205]

- Dermatological Conditions: Arctium is an alterative that is especially indicated in conditions of dry, scaly cutaneous eruption with mild inflammation and poor peripheral circulation. Arctium radix acts in a slow, gentle manner, the full effect being evident after several weeks of use.

  Arctium is useful in conditions such as eczema, acne and psoriasis. [206, 207]
- Endocrine Conditions: Burdock seeds can lower blood sugar in rats, and in France the fresh root is used in diabetics to lower blood sugar and to help remove adipose tissue. Therefore, monitor insulin dosage in patients if used concurrently with this medication.
- Gastrointestinal Conditions: The bitter taste of Arctium underlies its tonifying action to the digestive system via gustatory nerve stimulation from the taste receptors in the tongue to the vagal afferents on the organs of digestion.
- Inflammatory Conditions: The roots and leaves are useful in rheumatism and gout because they encourage the elimination of uric acid by the kidneys. Additionally, A. lappa has anti-inflammatory actions, making it a useful adjunct in the treatment of rheumatoid arthritis. One study demonstrated that Arctium minus spp. decreased inflammation in RA sufferers by 57% versus 46% decrease in the control.[208]
- Hepatobiliary Conditions: The leaves, in particular, stimulate secretion of bile (choleretic).
- Topical Applications: Finally, Arctium leaves are useful in external applications for bruises, skin eruptions, and burns.

Pharmacy: Tea: 1 tsp. root/cup; 1 cup TID for several weeks (Children one glass daily). 1 tsp. seed/couple oz. water TID ic for several weeks (Children 1/2 tsp. seed/ 2 oz. water) These decoctions can be used undiluted as a poultice.
1:5 tincture- 2-4 ml TID

Contraindications: Brinker speculates that excessive doses be avoided in pregnancy due to empirical oxytocic effects and uterine stimulant effects.[209]

Toxicity: None has been reported, although a gentle approach with this herb is advisable since it can be a powerful detoxifier in some individuals.

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Arctostaphylos uva ursi

Ericaceae

Common name: Bearberry, Uva ursi, upland cranberry, kinnikinnick

Habitat:[210]

- Bearberry has spread from the Iberian Peninsula across Central Europe to Scandinavia and Siberia.
- It is also found in the Altai Mountains, the Himalayas and N. America

Botanical description:[211]

- Flower and Fruit: The flowers are in 3-12 short, terminal and hanging racemes. The pedicle has small, ovate, ciliate bracteoles at the base. The calyx is 1 mm long, palmate and has 5 membranous tips. The corolla is ovoid to jug-shaped, white or reddish with a red border, 5-6 mm long with 5 short revolute tips. The 10 stamens are half as long as the corolla tube. The filaments are thickened in the base. The anthers have porous openings, are crimson and have a long whip-like, curling appendage. The ovaries are 5-7 valved and the style is longer than the stamens. The fruit is a globose, pea-sized, scarlet, floury drupe. The fruit has 5-7 stone seeds, 4 mm in length, which are kidney shaped and compressed at the sides.
- Leaves, Stem, and Root: The plant is a decumbent, up to 1.5 m long, creeping espalier with elastic, red-brown branches. The leaves are alternate, coriaceous, short petioled, spatulate-obovate or wedge-shaped, entire-margined and slightly revolute. They are 12-30 mm long by 4-15 mm wide, glabrous, glossy, and evergreen. The underside is reticulate and the midrib and the margins are often downy.
- The drooping clusters of flowers at the ends of the branches bloom in May and June. The berry ripens in autumn.[212]

Parts used: Leaves (the summer and autumn leaves are more potent than the winter leaves)

Energetics:[213] Astringent, cold, dry. Berry is also a bit sweet and astringent.

Constituents: [214,215, 216]

- hydroquinone glycosides (4-15%): arbutin, methylarbutin
- polypheneols
- tannin (increased in older leaves)
- flavonoids (quercetin)
- resin, acids (ursolic, gallic, ellagic)
- allantoin
- volatile oil (triterpene alkaloids)

Pharmacology:

- The glycoside arbutin is the active ingredient present in fairly high amounts (up to 10%) in uva ursi. In the intestines, arbutin is split into a small sugar molecule and a hydroquinone. Hydroqiunone is then made water-soluble in the liver and can be carried by blood to the kidneys. In the kidneys, if the urine is alkaline, the hydroquinone is released from its carrier. Hydroquinone is a powerful anti-microbial agent, which is responsible for uva ursi's ability to treat urinary tract infections. Arbutin has also been shown to increase the anti-inflammatory action of synthetic cortisone. [217,218] According to early animal research, activity of other commonly prescribed anti-inflammatory drugs can be potentiated by arbutin and possibly other constituents of uva ursi. One study found that an aqueous extract increased the inhibitory activity of dexamthasone in allergic and inflammatory models without increasing any of the side-effects. Similar results have been demonstrated with isolated arbutin when combined with indomethacin.[219]
- Flavonoid components prevent the splitting of arbutin, thereby allowing more arbutin to be hydrolyzed in the body, compared to amount of hydrolysis when arbutin is administered as an isolated component. Arbutin alone has been reported to be an effective urinary antibiotic, but only if taken in large doses and if the urine is alkaline (once again documenting the value of whole plant medicines). Arbutin is reported to be active against Candida albicans and S. aureus, and especially active against E. coli. Uva ursi also has diuretic properties.[220,221]

Medicinal actions: antibacterial, astringent, anti-inflammatory, diuretic, tonic, oxytocic

Traditional medicinal uses: [222]

- Genitourinary Conditions: Arctostaphylos is generally used as a diuretic and a sedative for the genitourinary system, exerting an astringent and tonifying effect. The specific indications for Arctostaphylos are relaxed conditions of the bladder walls, to which it imparts tone, induces normal contraction, and restrains excessive mucous discharges. Accordingly, conditions responsive to Arctostaphylos include ulceration of the bladder, cystitis, pyelonephritis and gonorrhea. As a general influence, its use has been

indicated in diabetes. Furthermore, it exerts a soothing influence on the urinary tract, thereby finding a place in most formulas for conditions of these organs.

Current medicinal uses:

- Genitourinary Conditions:
- Inflammatory Conditions: Internal and external use may be indicated for contact dermatitis, inflammatory edema and arthritis as extrapolated form pharmacological studies. [223] Arbutin may have synergistic activity with conventional anti-inflammatory drugs (indomethaicn, prednisone, dexamethasone) on type 4 hypersensitivity reactions. [224]
- Dermatological Conditions: Arbutin appears to inhibit tyrosinase activity resulting in the decreased synthesis of melanin and may have a role in hyper pigmentary disorders.
- Clinical trials have supported use for cystitis, both acute and recurrent. According to the British Herbal Pharmacopoeia 1983, the specific indication is acute catarrhal cystitis with dysuria. Studies show that the anti-microbial effect occurs within alkaline urine. Considering that a majority of urinary tract infections produce acid urine, simultaneous administration of an alkalinizing agent such as bicarbonate may be of benefit. Also, an alkaline forming diet, rich in fruits and vegetables should also be utilized. [225]

According to Weiss:[226]

- Genitourinary Conditions: In the case of urinary tract infections, it is very effective as an antimicrobial if the urine is sufficiently alkaline. Arctostaphylos has been successfully used to treat cystitis in paraplegics. Weiss indicates that the leaves have no diuretic action. In fact he cautions against flushing the urinary tract in acute cystitis as flushing increases tissue irritation. Rather, he suggests that the bladder requires rest. Administering Arctostaphylos in a carrier of Matricaria tea will also provide the antiphlogistic and spasmolytic properties of the latter herb. In turn, he will flush the urinary tract in chronic catarrhal conditions in which large quantities of Arctostaphylos tea are indicated although other diuretics may be less upseting due to the tannin content.
- Alternative plants include Vaccinium vitis-idea (cowberry), Calluna vulgaris (heather) and Chimaphila umbellata. Each of these herbs contain arbutin to a lesser degree and little to no tannin. Thus, where the tannin content of Arctostaphylos would be undesireable, these other herbs may be of assistance.

According to the Textbook of Natural Medicine [227]:

- Genitourinary Conditions: Arbutin has been reported to be active against Candida albicans, E. coli and S. aureus. Arctostaphylos can be used in both the acute treatment and the prevention of recurrent cystitis. Arctostaphylos is used primarily in the treatment of cystitis, ulcerations of the kidney and bladder, and to soothe and tonify these organs. The whole plant contains alkalinizing components, in addition the flavonoids in the plant envelop the arbutin, thus facilitating its absorption. For this reason the whole plant is best. Additionally, further alkalinizing the urine by adding bicarbonate will strengthen the antimicrobial action of the plant. The urine may turn a dark or brownish-green color when it contains sufficient amounts of oxidized hydroquinone. Arctostaphylos is most effective against E. coli infections. Arctostaphylos is diuretic due to the flavonoids and ursolic acid. Arctostaphylos imparts tone to the urinary system and is, therefore, most indicated in weak, atonic bladders (manifested by urinary frequency, incontinence, and a sensation of heaviness in the perineum). The tannins in Arctostaphylos give this plant an astringent action, contributing to the antiseptic action while tonifying and strengthening the urinary system. Arctostaphylos is a useful adjunct in the treatment of renal calculi and gravel.

According to the Textbook of Natural Medicine [228]:

Inflammatory Conditions: Arbutin, and possibly other constituents, potentiate the activity of commonly prescribed anti-inflammatory drugs including dexamethasone and indomethacin.

According to Mills and Bone:[229] Any condition requiring astringent action calls for Arctostaphylos.

- Gastrointestinal Conditions: diarrhea and intestinal irritaions.

Current Research Review

- Urinary disorders: In one double-blind study, the prophylactic effect of a standardized uva ursi extract compared to a placebo on recurrent cystitis was evaluated in 57 women. At the end of one year, 5/27 women in the placebo group had a recurrence while 0/30 women receiving uva ursi extract had a recurrence. No side-effects were reported in either group. [230,231]. The Comission E recommend its use for inflammatory disorders of the urinary tract.
- Search of Medline revealed no human trials as of 1/15/03

Pharmacy:

- Dried leaf: (1 tsp= 2.5g herb) [232]
  - up to 12 g qd (equivalent to 400-840 mg arbutin) as infusion or cold macerate.[233]
- Infusion:
  - 1-2 tsp of dried leaves/cup boiling water. Infuse 10-15 min. Sig TID. [234]
  - 3 gm/150 ml water up to QID[235] - same dose for cold maceration.

- Standardized extract
    - 70 mg arbutin: two 0.7 g tabs BID-TID. [236]
    - 400-840 hydroquinone derivatives calculated as water-free arbutin. [237]
- Tincture:
    - 1:5 tincture: 10-17 ml qd[238]
    - Unspecified strength: 2-4 ml TID[239]
- Liquid extract:
    - 1:2 liquid extract: 4-8 ml qd[240]
    - Unspecified strength: ½ tsp TID[241]
- Decoction:
    - 1 Tbsp/2 cups, boil down to 1 cup. No sig given [242]

Drug interactions:

Contraindications:

- Considering that arbutin converts to hydroquinone in alkaline urine, urinary acidifiers can theoretically inhibit this conversion.[243] Arctostaphylos should be avoided during pregnancy due to an oxytocic effect.[244,245] Mills and Bone also list lactation as a contraindication. Use in children under 12 may be contraindicated due speculation of possible liver impairment from metabolites and its inhibition of B cell maturation (in vitro).[246,247] Considering the high tannin content, Arctostaphylos is not recommended for long term use.[248] Considering the tannin content, use should be avoided in organic kidney disease.[249] Use of Linum has been suggested as an adjunct in preventing gastric irritation from the tannins, yet Linum prevent the absorption of arbutin.[250]

Toxicity:

- The tannins can a cause gastric irritation if used for too long or in too high of a dose.[251] The toxicology is proportional to the conversion of arbutin to hyrdroquinone as hydroquinone is a highly toxic and mutagenic. 15 g of the fresh leaves can provide 1 g of hydroquinone which can be toxic with signs and symptoms of: tinnitus, nausea, vomiting, sense of suffocation, shortness of breath, cyanosis, convulsions, delirium and collapse.[252]

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[232] PDR, 658

[233] Mills and Bone, 280

[234] Hoffman 173

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[237] PDR, 658

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[239] Hoffman 173
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Arnica montana

Asteraceae

Common name: arnica, leopard's bane, wolf's bane, mountain tobacco

Botanical description: A 20-30 cm tall perennial herb with opposite leaves. 1-3 flower-heads, one terminal and the others arising from the axils of the leaves. Receptacles 5-8 cm broad, with 15-25 yellow, ligulate florets.

Parts used: Flowers

Constituents:

- Psuedoguaianolide-type sesquiterpene lactones (0.2%-0.8%)
- Helenalin and esters of helanalin
- Fatty acids, Flavonoids and flavonoid aglycones, Volatile oil: with thymol, thymol esters, free fatty acids, sesquiterpenes, Cinamic acid, Coumarins, Polyacetylenes, Choline, Xanthophylls, Polyenes , Hydroxycumarine

Pharmacology [253]

Arnica exhibits anti-inflammatory activity by affecting the neutrophils and liver cells through one or more of these mechanisms; uncoupling oxidative phosphorylation , elevating cAMP, inhibiting lysosomal enzymatic activity, and inhibiting chemotaxis. At high concentrations cyclooxygenase may be inhibited

Arnica exhibits some antimicrobial activity. The essential oil has potent bactericidal effects on Gram positive and negative bacteria as well as *Candida.* The polyacetylenes from the root have demonstrated Antimicrobial effects against various pathogenic fungi and bacteria.

Medicinal actions: Wound antiseptic, anti-rheumatic, antineuralgic, antiphlogistic (relieves inflammation)

Pharmacology: Helenalin and dihydrohelenaline esters are the main identified Constituents. These Constituents have strong antimicrobial, antiphlogistic, antirheumatic, anti-arthritic, and antihyperlipidemic properties.[254]

Traditional Medicinal Use:

Specific Indications and Uses—Muscular soreness and pain from strains or over-exertion; advanced stage of disease, with marked enfeeblement, weak circulation, and impaired spinal innervation; embarrassed respiration; lack of control over urine and feces; sleeplessness from impeded respiration, and dull precordial pain from "heart-strain;" muscular pain and soreness when the limbs are moved; tensive backache, as if bruised or strained; cystitis, with bruised feeling in bladder, or from a fall or blow; headache, with tensive, bruised feeling and pain on movement; hematuria, with dull, aching lumbar pain, or from over-exertion. All cases of debility with enfeebled circulation.[255]

- Topical Applications: Arnica was considered a local irritant, the preparations of the flowers being most powerful. Arnica was used in the form of an infusion, a fomentation, or diluted tincture of the flowers, both to prevent and disperse local inflammations, to remove ecchymosis, and as a dressing for cuts, lacerations, contusions, etc. A fluid extract of Arnica has been found very useful as an application for the bites of mosquitoes and other insects.

Current Medicinal Use: Arnica is reserved for topical use only. As an external agent is useful for sprains, bruises, hematoma, edema, fractures, over areas of phlebitis and thrombosis, arthralgia and rheumatic joint pains, inflamed insect bites. Arnica is most specific for bruises and may also be used as a massage oil to help relieve muscle soreness and stiffness.

- Cardiovascular Conditions: Chronic venous insufficiency: A well-conducted trial showed Arnica to be superior to placebo in reducing edema and feelings of heaviness and improving venous tone [256] (gel containing a 20% tincture given daily for three weeks).
- Topical Applications**:** Arnica gel was superior to placebo in 12 male volunteers with muscle ache. [257]

Pharmacy: External use over intact skin only: Poultice or application of infusion 2g/cup (1 tsp. = 0.5 g) or arnica oil.

Contraindications:

Strong preparations should not be applied on broken skin or full strength, as an erysipelatous inflammation has followed application to sensitive skin.[258] Prolonged external use can cause allergic dermatitis. Use should be avoided in pregnancy.[259]

Internal use should only occur under the supervision of knowledgeable physician.

Toxicity:

The sesquiterpene lactones are toxic causing gastroenteritis and with higher doses cardiac arrest. The helenolides are also known to interfere with myocardial recovery in between contractions. Two fluid ounces of the tincture has produced death.[260] Pharmacokinetic information about the sesquiterpene lactones is lacking and therefore oral dosing of Arnica is to be avoided.[261]

With prolonged external use, edematous dermatitis may result with the formation of small vesicles. Helanalin and its esters are sensitizing agents and act as allergens.

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Artemisia absinthium / A. spp.

Asteraceae

Common name: wormwood (A. absinthum), wormseed (A. santonica - Cook states that A. contra and A. aborantum, a domestic plant, has a very similar in action to A. santonica. Ellingwood refers to this plant as A. pauciflora)

Habitat: Native to Europe, N. Africa, W. Asia and cultivated in the U.S. and elsewhere.

Botanical description: A shrubby perennial reaching 1 m; leaves pinnately divided, up to 12 cm long, the lobes oval or lanceolate. Both surfaces covered with fine, whitish, silky hairs. The flowers are small, nearly globular, greenish-yellow.

Parts used: Herba, collected at the end of the flowering period between July and September. Wormseed is actually small flower buds.

Constituents:

- volatile oils (thujone, absitol, azulenes) [0.2-1.5%]
- bitter sesquiterpenes and bitter sesquiterpene lactones [0.15-0.4%]
- terpenoids , triterpenoid, flavone glycoside, hydroxycoumarins, lignans

Pharmacology: No information is currently available.

Medicinal actions: bitter, carminative, anti-microbial, anthelmintic, choleretic, emmenagogue (thujone)

Traditional Medicinal use:

- Gastrointestinal Conditions: Artemisia is another bitter plant. It is most indicated in conditions of poor appetite with sluggish digestion. Fermentation in the gut causing halitosis can be relieved with the use of Artemesia. Dyspepsia, flatulence, malabsorption (including anemia), and degeneration of the gastrointestinal system can all be relieved with the use of Artemisia. Artemisia is well indicated in the elderly population for decreased hydrochloric acid production and decreased pancreatic secretions. Artemisia decreases bile duct spasm and increases efficient bile duct contractions.

  King recommended its used In small doses it is a stimulant tonic, improves the appetite, and is useful in atonic states of the gastro-intestinal tract, as a tonic dyspepsia, especially when due to alcoholic excesses, in flatulent colic, and in obstinate diarrhoea. Large doses are apt to irritate the stomach and increase the action of the heart and arteries.[262]

  To the physiomedicalists the leaves and flowers were stimulating and relaxing tonics, with bitter and strong properties that act upon the stomach and gall-ducts. Of these effects it was a favorite addition to tonic preparations for bilious conditions, intermittents, jaundice hypochondria, diarrhea and similar maladies.[263]

  Artemisia is useful for sweet/sugar cravings especially when combined with Mentha pip. (3-5 gtts SL). Artemisia is a useful therapy for hypoglycemia if taken after meals (enhances absorption and helps to normalize pancreatic and liver secretions).

  The common name, Wormwood, signifies its use as an anthelmintic (especially against roundworm, *Ascaris lumbricoides,* and pinworm*, A. vermicularis,* and Cook includes tapeworm although no other authors do). According to Ellingwood, there are a large symptoms associated with the specific indication of lumbricoid worms, all of which are seldom present at one time in a single present. Those symptoms worth noting are a deep red tongue without coating with digestive symptoms of an excess nature due to intestinal irritation.[264] Artemisia absinthium is the strongest Artemisia species for this action although Cook states that A. santonica is a prominent remedy for worms: its actions seem to be much like A. absinthium, but more stimulating and diffusive and less locally tonic. A good combination is Artemisia absinthium.: Mentha puelgium: Tanacetum vulgare:Bentonite. This combination is best encapsulated and can be used for worms in pets as well.
- Genitourinary Conditions: Ellingwood noted that A. paucilfora could be used to increase the secretion of urine in children, restoring normal urinary function in post scarlatinal and post diphtheritic nephritis.[265]
- Gynecologic Conditions: Artemisia can be used as a douche for infectious vaginitis. As a result of its influence on digestion, it exerts a little stimulating influence upon the uterus indicating its use in with good results in amenorrhea and leucorrhoea when due to debility.[266,267]
- Immune Conditions: Artemisia is a good general tonic useful in colds and flus.
- Nervous Conditions: Absinthium possesses decided medicinal qualities, acting with considerable force upon the cerebrum and the sympathetic, nervous system. Ellingwood considered A. pauciflora a nerve sedative, particularly for irritation of a reflex character when the cause was faulty digestion and decomposition of food. He also noted the successful use of this herb for reflexive nervous irritation in the respiratory tract, mild heart pain, fever, pregnancy and epilepsy[268]
- Ophthalmologic Conditions: Artemisia is an excellent addition to eye wash especially in an infusion with Rubus and Euphrasia.
- Sleep Conditions: Finally, Artemisia is known to stimulate dreams, and Artemisia vulgaris is said to stimulate dreams of the future. Some individuals claim this effect by sleeping with the herb under their pillow.
- Topical Applications: Artemisia has indications outside of the digestive tract as well. An oil of Artemisia is an excellent topical

application for bruises and infections. For bruises, it combines well with Lobelia, and will decrease healing time and pain. King has also described its use as an external application in chronic affections of the abdominal viscera, either in the form of tincture, infusion, or poultice.

Current Use

- Endocrine Conditions: blood sugar disturbances, including the dietary management of diabetes
- Gastrointestinal Conditions: The specific indication for bitters is the patient who is pale, lethargic and prone to infections. Specifically, Artemesia spp. are indicated for poor appetite and digestion, chronic gastritis and gastric ulceration, food intolerances and allergies. In regard to intestinal dysbiosis, focus on hepatic and biliary function as well as the application of bitters supports a high fiber diet with reduced simple sugar intake. Through stimulation of hydrochloric acid and bile secretion, Artemesia can help prevent enteric infections, particularly in patients with poor immunity. A. annua is an antiprotozoal agent as well .[269]
- Hepatobiliary Conditions: liver and bile disturbances, jaundice, gall stone disease. Evidence of hepatoprotective effects also arises from studies with Artemesia species.
- Inflammatory Conditions: fever, inflammatory conditions of the skin, inflammation in general, allergic and hypersensitivity conditions
- Neurological Conditions: headaches and migraines.

Current Research Review

- **Breech presentation:**[270]
  - Design: randomized, controlled, open clinical trial.
  - Patients: 260 subjects, primigravidas in the 33rd week of gestation with normal pregnancy and an U/S diagnosis of breech presentation.
  - Therapy: Stimulation of the acupoint BL 67 (located on the lateral nail bed of the little toe) by moxa (Japanese term for Artemisia vulgaris) rolls x 7 days, with additional 7 days if breech persisted.
  - Results: Moxibustion x 1-2 weeks increased fetal activity during the treatment period and cephalic presentation after the treatment period and at delivery.
- **Diabetes mellitus:**[271]
  - Design: Preliminary study
  - Patients: 15 patients with diabetes mellitus
  - Therapy: Artemisia herba-alba Asso. Extract (AHE)
  - Results: AHE caused considerable lowering of elevated blood sugar; 14 out of 15 patients had good remission of diabetes symptoms.

Pharmacy: For a bitter effect, Artemesia and other bitters do not need to be administered in high doses but only enough to stimulate a strong bitter taste. For formulation, a tincture that is 5-10% bitters will be adequate. Although long-term therapy is beneficial and may be necessary, work to a place where bitters are taken only when necessary.[272]

A small portion serves well in cases of decided languor and sluggishness of action. Considerable doses of long-term use leads to excitement of the stomach, pulse and brain in a narcotic fashion although the effect is more likely due to a very slow and persistent stimulation and tonic action on both the heart and nervous system. Cook rarely uses more than a half ounce of this herb in a total volume of one gallon of a tonic formula.[273]

Prolonged use of forms high in the essential oil such as alcoholic extracts should be approached with caution due to toxic effects thujone accumulation (empirical).[274]

Powder
Infusion:
1-2 g/ 8 oz. water, sig 1/2 cup ac [1 tsp. = 1.5 g] (Alschuler)
Tincture:
1:5 25% EtOH, sig 0.5-1 ml in water ac; max. dose 25 ml/week (Alschuler)
Lotion or oil externally over intact skin; as a warm fomentation steeped in water or vinegar and water, and applied as hot as can be borne.

Contraindications:

Bitters are contraindicated in states of hyperacidity, especially duodenal ulcers.[275] Although often avoided in gastric ulcers, bitters may be beneficial as this condition is often associated with atrophic gastritis. Caution is advised in cases of gastroesophageal reflux, although bitters may improve this condition by improving the tone of the lower esophageal sphincter. Finally, caution is advised in patients who are “supertasters”, people who perceive the greatest sensitivity to tastes.[276]

Traditional contraindications for bitters include conditions described as ‘cold-dry.’ For example, conditions involving shivering dry cough and notably including some kidney diseases.

The use of Artemisia is contraindicated in pregnancy due to its emmenagogue and abortifacient effects (empirical) from the uterine stimulant action of its thujone content (in vitro and animal studies).[277]

The use of Artemisia is contraindicated in irritable nervous states, and seizure disorders (Alschuler).

Toxicity:

Adapted from King: [278]

Physiologically both oil of wormwood and extract of absinth act as nerve depressants. Less than 1/8 ounce doses produced in tremors, spasmodic muscular action of a clonic character, intoxication, and loss of sensibility in animal studies. Larger doses produced violent epileptic seizures, in some instances resulting fatally.

Small doses act as a gentle stimulant, larger doses produce headache, while still larger doses induce cerebral disturbances and clonic convulsions. Victims of *absinthism* are subject to disturbed rest, with disagreeable dreams, awakening in the morning with sickness and vomiting. A chronic intoxication ensues that is more fearful in its effects than that resulting from the abuse of alcoholics. A conspicuous feature is the tendency to epileptic attacks. Both physical and mental power is seriously impaired and the sexual system weakened to such an extent that virile power is lost in the male while a premature menopause is a common result in the female. It is also said to produce a peculiar hyperaesthesia, most marked in the integument of the hypogastria.

Thujone is present in herbs such as Artemesia absinthium, Achillea, Salvia and Thuja and is neurotoxic as demonstrated by its presence in absinthe. The first sign of toxicity from thujone is headache. High and prolonged doses of the above herbs should be avoided unless they are low thujone varieties.[279]

As described above, Artemisia (primarily thujone) is very toxic to the CNS, causing paralysis, decreased coordination, and (euphoric) hallucinations. These effects are said to be reversible. Thujone is not well preserved in water, thus water extractions are safer than alcohol extractions.(Alschuler)

Brinker also discusses the potential for allergic responses (contact dermatitis or other effects) to herbs in the Asteraceae family due to the sesquiterpene lactones.[280]

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[262] Felter HW, Lloyd JU. *King's American Dispensatory*, 18th ed. Eclectic Medical Publications, Sandy, OR 1983:6

[263] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy.* Eclectic Medical Publications, Sandy, OR 1985 :271-3

[264] Ellingwood, F. *American Materia Medica, Therapeutic and Pharmacognosy*. Ellingwood's Therapeutist, Chicago. 1919 p. 502

[265] Ellingwood p. 504

[266] Felter p 6

[267] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy…* Eclectic Medical Publications, Sandy, OR 1985 p. 271-3

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[270] Cardini F, Weixin H. Moxibustion for correction of breech presentation a randomized controlled trial. *JAMA* 1998;280(18):1580-4

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[272] Mills and Bone

[273] Cook p. 270

[274] Brinker, F. *Herb Contraindications and Drug Interactions*. Eclectic Medical Publications, Sandy, OR 1998. p. 137

[275] Mills and Bone p. 41, Brinker p. 137

[276] Mills and Bone p. 41

[277] Mills and Bone p. 99, Dr. Alschuler, Brinker p. 137

[278] Felter HW, Lloyd JU. *King's American Dispensatory*, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[279] Mills and Bone p 30

[280] Brinker p. 146, 149

Asclepias tuberosa

Asclepiadaceae (Milkweed Family)

Common name: Pleurisy Root, Butterfly Weed, Swallow Wort, Wind Root, Tuber Root.

Habitat: Indigenous to America & Canada.

Botanical description: A perennial herb preferring dry, gravelly & sandy soils. The large, irregular, yellowish-brown tuberous roots can be nauseating & bitter when fresh, but this is less so as the root dries. The hairy stems can reach 2-3 feet in height; bearing alternate, lanceolate, hairy leaves, which are dark green above & pale beneath. The flowers are erect & are of a beautiful bright orange-yellow in color. Asclepias tends to flower in June through late August to September, & is followed by erect, long, narrow, pubescent pods.

Parts used: Root, although raw root is potentially poisionous.

Energetics: Bitter, Pungent. Cooling. (-) Pitta & Kapha. (+) Vata.

Constituents:

- Cardiac Glycosides: Cardenolide steroidal glycoside called Ascepin.
- Flavonoids: Rutin, Kaempferol, Quercetin, Isorhamnetin.
- Amino Acids.
- Sugars.
- Volatile oil.

Pharmacology:

Cardiac glycosides are considered the main active constituent group in Pleurisy root. Of the two types of cardiac glycosides, Asclepias contains cardenolide glycosides; of which ascepin is principle. Cardenolides are composed of 23 carbons - consisting of a lactone ring attached to a steroidal nucleus (similar to cholesterol) & various sugars. A as rule, cardiac glycosides inhibit the sodium potassium pump, which leads to a rise in intracellular calcium, followed by an increase in contractile force & speed of the heart muscle. This increase in cardiac contractility & heart rate leads to an increase in cardiac output - a phenomenon also known as positive inotropy. A reflexive decrease in heart rate is cause by autonomic stimulation & is called negative chronotropy. This is the basis behind the use of cardiac glycosides in the treatment of certain cardiovascular conditions.

As with most substances that are taken into the body, the more fat soluble a particular substance is, the more readily absorbed it is at the brush border. Fat solubility of a particular substance is determined by its constituent groups. If a constituent, for example attached to a cardenolide glycoside, is not particularly fat soluble, then once it reaches the large intestine, it will be digested by gut flora into a more lipid soluble form called an aglycone. The newly formed aglycone is more lipid soluble than the original parent compound & can thus be more readily absorbed; entering the portal venous system for further metabolism by the liver, before systemic action can be achieved.

Flavonoids are a second important consitutent found in Asclepias. In general, flavonoids are the “Biological Response Mediators” of the body. This means that they help to stabilize, protect & potentiate most biological reactions within the body. More specifically, flavoinoids have the following actions: anti-oxidant, anti-anaphylactic, anti-allergic, anti-thrombotic, anti-inflammatory, cardiotonic, hypotensive, & anti-arrhythmic. The flavonol glycosides rutin & quercetin that are found in Pleurisy root are considered “permeability factors”, meaning that they have the ability to influence the stability of capillary cell walls to decrease their susceptibility to vascular fragility. Quercetin has further known function within the body, namely in its use at decreasing the severity of allergic reactions by binding IgG & inhibiting GI & respiratory mast cells from releaseing histamine & other pro-inflammatory mediators.

Flavonoids are thought to be absorbed within the gut & concentrated in the skin. Just as flavonoids appear to have a protective role in animals, they seem to provide the same function for plants – providing protection for both plants & animals from the effects of intense solar radiation by acting as anti-oxidants. As such with other anti-oxidants, flavonoids act synergistically with Vitamin C, aiding its ability to quench roaming free radicals throughout the body.

Medicinal actions: Anti-spasmodic. Diaphoretic. Diuretic. Laxative. Tonic. Carminative. Expectorant. Febrifuge.

Current & Traditional Medicinal Use:

Asclepias is particularly indicated in cases characterized by: a strong, vibratile pulse; where the skin is moist; & if there is pain, it is acute & is often dependent upon motion." It can also be used in cases where: the skin is either hot & dry or inclined to moisture; where the urine is scanty; the face flushed; & there are signs vascular excitement in areas supplied by bronchial arterioles; where there is inflammation of serous tissues, including the GI. Asclepias is also indicated in catarrhal conditions d/t a recent cold.[281]

Pleurisy root is used in febrile & inflammatory conditions, where perspiration needs to be promoted & the heart calmed. In all cases, its use is followed by softening of the pulse & improved action of the kidneys. The mucous membranes become firmed, & the nervous system is soothed.

Asclepias is generally not chosen in chronic cases, depressed conditions, when the surface becomes cold, or where the pulse is small & feeble. Although, Asclepias should not be used where there is a tendency to too much perspiration. But, this does not mean that Asclepias is contraindicated when the patient is freely perspiring, only when perspiration is excessive & tending towards dehydration.

Pleurisy root acts upon: the pleura, peritoneum & the mucous membranes of the lungs & bowels. Particularly indicated in catarrhal conditions of the respiratory or GI systems, esp. when d/t recent colds. Asclepias was also traditionally used for: intercostal neuralgia, rheumatism, & in pericardial pains. In cases of exanthematous fevers, pleurisy root supports the eruptive process & helps to relieve painful inflammations through its diaphoretic action.

- **Cardiovascular Conditions:** The principle action of Pleurisy root in relation to the CV system is upon sympathetics, exerting: control over the sweat glands, relaxation of the capillaries, to ultimately relieve pressure upon the heart & vasculature. Hence, in general, Asclepias provides relief in acute arterial & nervous conditions.
- Gastrointestinal Conditions: Stomach troubles, particularly flatulent colic of children, benefit from small doses of Pleurisy root. Asclepias is often used as a remedy for nervous irritability in children, esp. when nervous irritability is related to disturbances of the stomach. Small doses of pleurisy root can tone a weak stomach d/t: nervous impairment, catarrh, & painful indigestion. Diarrhoea & dysentery resulting from catarrh & external cold has traditionally been resolved w/ Asclepias. Headache d/t disordered digestion, also responds well to Asclepias.
- **Pulmonary Conditions:** In the lungs Asclepias stimulates secretions & promotes expectoration. As its name indicates, pleurisy root is of much value in treating pleuritis. When combined w/ a sedative, Asclepias is one of the best known agents in the early stage of pneumonia & later stages of pneumonia where the pleura has become irritated & inflamed. Although, pleurisy root is thought to be the most effective in acute stages of pneumonia & bronchitis. During the convalescent stage of respiratory lesions, where expectoration is depressed & dyspnoea occurs, small, frequent doses of Asclepias are effective. It is effective as a remedy for dry & constricted cough, & is among one of the best drugs for acute nasal catarrh of infants.
- **Inflammatory Conditions:** Many consider Asclepias to be one of the most reliable of the diaphoretics, having a slow, but persistent effect. It can be combined w/ a more prompt stimulant, such as Zingiber; acting more as an assisting herb, rather than as the leading remedy. It differs from most diaphoretics in producing a true secretion from the skin, & is thus called for where the skin is dry & harsh.

Current Research Review:
Search of Medline yielded no human studies as of September 2002.

Pharmacy:

Contraindications/Toxicity:

- Contraindicated in pregnancy due to uterine stimulant action and estrogenic activity as demonstrated in animal studies. Cardiac glycoside content may enhance the activity of digitaloid glycosides.[282]

In higher dosages, the herb has an emetic effect, and digitalis-like poisonings are possible d/t cardioactive steroid content.[283]

Aspidosperma quebracho-blanco

Apocynaceae

Common name: White Quebracho

Habitat:

Botanical description: Native to Argentina. This is an evergreen tree which may grow to 100 feet with an erect stem and wide-spreading crown. The bark is thick, greyish and deeply fissured externally. The inner surface is yellowish-brown with a reddish tint.

Parts used: Bark

- Indole alkaloids (0.5-1.5%): aspidospermine (30%), yohimbine (quebrachine, 10%), (-)-quebrachamine, akuammidine
- rhazinilam, tannins, sugars, sterols

Pharmacology: Aspidospermine and quebrachamine like yohimbine have been found to possess adrenergic blocking activities for a variety of urogenital tissues. [285] Yohimbine functions as a monoamine oxidase (MAO) inhibitor to increase levels of the neurotransmitter, norepinephrine.

Yohimbine also acts as a central nervous system stimulator, where it blocks specific receptors (alpha-2 adrenergic receptors) and may increase energy levels and promote fat oxidation and promote lipolysis in the trunkal region.[286] In addition to these effects, yohimbine can also dilate blood vessels – making it a potentially useful treatment for erectile dysfunction and some forms of impotence in men. [287]

In general, adrenergic blockers prevent vasoconstriction while still allowing vasodilation.

Medicinal actions: Antiasthmatic, tonic, febrifuge.

Traditional Medicinal Use: Quebracho is said to be valued as an antiperiodic by the Chileans.
Specific Indications: Dyspnoea of functional origin; dyspnoea with emphysema, face pale, anxious, and livid, lips

- Pulmonary Conditions:[289] The chief value of Aspidosperma was considered its property of controlling dyspnoea, when not due to organic changes. (Some, however, have contended that it is equally valuable when structural changes are present.) Aspidosperma was used in both cardiac and asthmatic dyspnoea, as well as in emphysematous states and was considered a remedy of marked value where there is evidence of imperfect oxygenation: such cases show a disturbed relation between the pulmonic circulation and the action of the heart.

In cardiac asthma has been reputed one of the best remedies, and to relieve the distressing dyspnoea of capillary bronchitis, advanced bronchitis, asthmatic bronchitis, and simple asthma, with insufficient cardiac power, it has been highly praised. Pure, uncomplicated asthma is not much benefited by it, but asthma associated with emphysema is very promptly met by it.

- Topical Applications: Wounds are sometimes dressed with the fluid extract.

Current Medicinal Use: The alkaloids are hypotensive overall. However, they are arterially hypertensive, spasmolytic, diuretic, peripherally vasoconstrictive, and respiratory stimulating.

- Pulmonary Conditions: Quebracho is most indicated when dyspnea results from impaired pulmonary circulation secondary to a functional disturbance of the heart. Quebracho increases the rate and depth of respiration and thus relieves dyspnea associated with emphysema and asthma. It is best indicated long-term to reduce the frequency and severity of asthmatic events. Quebracho will not generally stop an asthmatic attack.

Dr. Mary Bove calls Quebracho the "silybum of the lungs".

Pharmacy: Tincture—0.5-1.5 ml TID

Contraindications: No information regarding contraindications currently exists.

Toxicity: No information regarding toxicity currently exists

[284] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

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[289] Felter

Astragalus membranaceous — Leguminaceae

Common name: Astragalus, Huang Qi

Habitat:

Botanical description:

Part used: radix

Historical use:

Energetics: Sweet, slightly warm. Astragalus enters the spleen and stomach meridians.

Constituents:
Astragalus contains numerous components, including[290]:

- flavonoids
- polysaccharides
- triterpene glycosides (e.g., astragalosides I–VII),
- amino acids
- trace minerals

Pharmacology:
Immune function**:** [291]
In vitro:

- Enhances the cytotoxicity and activity of NK cells
- potentiates phagocytic function and superoxide anion production by macrophages
- Protects against immunosupression induced by chemotherapy

Human

- Increases serum IgM, IgE, IgA, cAMP, IFN levels
- The polysaccharide fraction potentates NK cell activity induced by IL-2 in AIDS patients
- Enhances leukocyte synthesis
- Enhances T3, T4, and T4/T8 ratios in patients with viral myocarditis.

Antiviral activity: [292]
In vitro

- Inhibits adenovirus
- Promotes production of interferon against parainfluenza virus
- Hepatitis B surface antigen-inactivating activity

Metabolic activity: [293]

- Addition of Astragalus to cell cultures enhanced growth, metabolism, and longevity
- It lowered oxygen consumption in mitochondria, enhanced tolerance to stress and prolonged the life of human embryonic cells in culture
- Administration of Astragalus to mice markedly increases plasma cAMP
- Improved learning performance in animal maze tests
- Improved endurance in mice and increased weigh gain
- Lowered collagen production in rat aorta and lung to levels found in young animals

Cardiovascular activity: [294]

- Saponins are inotropic possibly due to modulation of Na-K- ATPase
- Counters the ride in blood pressure and plasma rennin activity in a hypertensive model
- Cardiac output increased in 20 patients with angina pectoris after two weeks of treatment
- Astragalus strengthened left ventricular function and had a antioxidant effect in acute myocardial infarction patients

Other activity: [295] Astragalus is also hepatoprotective, reduces blood cell deformability, decreases blood viscosity, and scavenges free radicals

Medical actions: metabolic restorative, hepatoprotectant, renal restorative, diuretic, astringent, hemostatic, vulnerary, immunostimulant, leukocytogenic, antitumoral, hypotensive

Traditional Medicinal Uses: In Chinese herbal medicine, qi tonics are used to strengthen or supplement parenchymal tissue and bodily processes that are weak in order help build defenses against disease. A qi tonic can be used along side other herbs to tonify qi, thus can be used in formulas that expel pathogens and formulas that treat deficiency patterns.

Tonic herbs tend to strengthen and penetrate deeper into the body tissue and structures, thus are not to be used exterior conditions when no releasing herbs are present (pathogenic factor may linger or penetrate deeper into the body with the tonic herb)

Tonic herbs are often cloying and difficult to digest, thus precautions are taken if the patient experiences yin deficiency(dry mouth, irritability, insomnia) or damage to the middle jiao (indigestion or abdominal discomfort). Often, stages of tonification must be used to get to a level where common tonifying formulas can be administered as the patient may be to weak to tonify in the way that is being used.

Common functions of Astragalus in Chinese herbal medicine include:

- tonifies SP, benefits qi: wasting/ thirsting syndrome
- raises yang qi of stomach and spleen
- stabilizes the exterior or consolidates the exterior to stop sweating
- promotes urination, reduces edema
- promotes healing, particularly in diabetic ulcerations
- tonifies qi and blood: postpartum, blood loss

No information is available from the selected Eclectic and Physiomedical resources on Astragalus.

Current Medical Uses:

- **Hepatobiliary Conditions:** Early clinical studies in China suggest Astragalus root might also benefit people with chronic viral hepatitis, though it may take one to two months to see results [296].
- **Immune Conditions:** Astragalus has been commonly used for Viral Infections. More recently, Astragalus has been used to treat leukopenia due to chemotherapy or radiation therapy. One Chinese study also found that Astragalus could decrease overactive immunity in people with systemic lupus erythematosus [297]. However, much more research is needed to know if Astragalus is safe in lupus or any other autoimmune disease.
- **Renal Conditions:** A randomized study found that IV Astragalus in people undergoing dialysis for kidney failure improved one facet of immune function compared to untreated controls [298].

Current Research Review:

- **Cardiology:**
  - **CHF:**[299]
    - Design: Clinical trial
    - Patients: Nineteen patients with congestive heart failure
    - Therapy: Astragaloside IV (XGA) injection (constituents of Astragalus membranaceus) x 2 weeks
    - Results: Dyspnea and chest distress were alleviated in 15 patients; their capability of exercise reinforced. XGA was concluded to be an efficient positive inotropic drug, with possibility to improve left ventricular modeling and ejection function in patients with CHF.
  - **Viral myocarditis:**[300]
    - Design: Randomized controlled clinical trial.
    - Patients: Patients with viral myocarditis.
    - Therapy: Astragalus membranaceus (AM) oral liquor combined with routine therapy – experimental, routine therapy alone - control
    - Results: Cellular immunity (T-lymphocyte subsets) was improved.
  - **Myocardial infarction**:[301]
    - Design: Controlled clinical trial.
    - Patients: Forty-three patients first suffering from acute MI within 36 hours.
    - Therapy: Astragalus membranaceus x 4 weeks.
    - Results: Left ventricular function was strengthened and oxygen free radicals (OFR) were reduced. Ratio of pre-ejection period/left ventricular ejection time was decreased, SOD activity of RBCs was increased, and the lipid peroxidation content of plasma was reduced. It is thought that the anti-OFR effect of AM is one of the mechanisms of its cardiotonic action.
  - **Ischemic heart disease:**[302]
    - Design: Controlled clinical trial.
    - Patients: Ninety-two patients with ischemic heart disease

        - Therapy: Astragalus membranaceus – experimental. Control – Nifedipine and Tab Salviae miltiorrhizae.
        - Results: Patients had relief from angina pectoris. EKG improvement was 82.6%.
    - **Ventricular late potentials**:[303]
        - Design: Clinical trial
        - Patients: Thirty-eight patients with positive ventricular late potentials.
        - Therapy: Astragalus membanaceus 24 g IV drip x 2 weeks (22 patients) or lidocaine 100 mg IV x 2 weeks (16 patients).
        - Results: EKG normalized for 2 (12.5%) in lidocaine group and for 3 (13.6%) in A. membranaceus group.
    - **Angina pectoris:**[304]
        - Design: Clinical trial
        - Patients: Twenty patients with angina pectoris
        - Therapy: Astragalus membranaceus x 2 weeks. \
        - Results: Increase in cardiac output; no improvement on left ventricular diastolic function. ATP activity was not inhibited.
- **Infectious diseases:**
    - **Chronic cervicitis**:[305]
        - Design: Clinical trial.
        - Patients: Patients with chronic cervisitis.
        - Therapy: Interferon alpha 1 (rINF-alpha 1) – one course and Astragalus membranaceus.
        - Results: 93.8% of cases showed clinical improvement and 60% marked improvement. HPV-16 and HSV detection rates dropped down. Astragalus membranaceus was shown to be synergic to interferon therapy.

Pharmacy:

tincture (1:5): 5 ml tid
dried radix: 1-2 g
Standardized Solid Extract: 0.5% 4-hydroxy-3-methoxy isoflavone; 100-150 mg

Drug Interactions:

- In vitro studies have demonstrated enhancement of IFN-1 and IFN-2 in spleen cells induced with Astragalus and 10-fold potentiation of IL-2.[306]
- Potentiation of acyclovir against HSV-1 with 250 mg/Kg/day for 5 days in mice.[307]
- Induction of Th cells and enhancement of antibody response to a T-dependent antigen following use of cyclophosphamide in mice.[308] Thus, speculation has arose around the theoretical counter effect of Astragalus on the immunosuppressive effect of cyclosporine and corticosteroids.[309]
- Use of the alcohol extract at 3gm/kg qd for 7 days reduced stillbenemidine induced liver damage in mice.[310]

Contraindications: In Chinese herbal medicine, Astragalus is contraindicated in yin deficiency with heat and exterior excess heat conditions. Brinker states that Astragalus be avoided in acute infections[311], similar to Chinese herbal medicine as exterior excess heat is equivocal to an acute infection.

Toxicity: No information is currently available.

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[292] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 273-279

[293] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 273-279

[294] Ibid

[295] Ibid

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Atropa belladonna

Solanaceae

Common name: Deadly nightshade, dwale

Habitat:

Botanical description: The herb is a 1 m high perennial. The leaves are ovate, up to 25 cm long with an entire margin. The flowers are campanulate, green to purple in color and are followed by shiny, black berries. The root is 2 cm in diameter, pale brown with white pith.

Parts used: leaves, root

Constituents:

Leaf and Root:

- Tropane alkaloids (up to 0.5% in leaves and roots): hyoscyamine, atropine, hyoscine, belladonnine
  Hyoscyamine refers to the l-isomer; the most typical active constituent of Atropa, Hyoscyamus and Datura. It converts to the d-isomer during the drying process creating atropine, racemic mixture of d,l hyoscyamine.
  Hyoscine/ scopolamine: is the l-isomer of hyoscine.
- Other (leaf only): Volatile pyridine and pyrrolidine bases; Flavonoids, Hydroxycoumarins: scopoletin, scopolin, kaempferol and quercetin derivatives

Pharmacology:

In the parasympathetic nervous system atropine and hyoscyamine blocks the muscarinic cholinergic receptors causing central nervous system stimulation followed by depression. The alkaloids also cause hallucinogenic and hypnotic effects (lowered brain activity during which time deep sleep does not occur, but dreams do). However, these effects do not appear to affect nicotinic acetylcholine receptors, thus targeting smooth muscle activity and sparing skeletal muscle function. Atropa use may result in muscular tremor or rigidity due to effects on the central nervous system. Atropa was considered a sympathetic stimulant by the Eclectic physicians, and relatively speaking, sympathetic effects were noted from its use. However, these were parasympatholytic effects that were unknown at their time.

Atropine is a CNS stimulant with a tropism for the heart, lung and abdominal organs. In the peripheral nervous system, the anticholinergic actions include reduction of gastrointestinal secretions and motility as well as relaxation of bronchioles and skeletal muscle. Atropa belladonna preparations have a positive dromotropic as well as a positive chronotropic effect on the heart. [312]

In contrast, Hyoscine does not stimulate the central nervous system and is in fact a CNS sedative, which may be helpful in allaying motion sickness. It has a greater influence on the eye and secretory glands. Both atropine and hyoscine will dilate the pupil of the eye when prepared into ophthalmic eye drops.

Medicinal actions: Narcotic, sedative, mydriatic, respiratory spasmolytic, anodyne

Traditional Medicinal Use:

Specific Indications and Uses: Dull, expressionless face, dilated or immobile pupils, dullness of intellect, impaired capillary circulation of skin or internal organs; drowsiness, with inability to sleep on account of pain; cold extremities, dusky, bluish face and extremities; skin soft, doughy, or pasty; circulation sluggish, with soft, full, oppressed, and compressible pulse; slow, labored, and imperfect breathing; sleeping with eyes partially open; hebetude; coma; urinal incontinence; copious passages of limpid urine; deep aching in loins or back, with sense of fullness. The remedy for congestion, with dilated capillaries; a deep redness of the skin, effaced by the finger, leaving a white streak, the blood slowly returning to the part; spasm of the involuntary muscles; nervous excitation, with wild and furious delirium; also in pallid countenance, with frequent urination.[313]

The Eclectics classed Atropa with the group of "special sedatives." They observed that therapeutically employed Atropa (i.e. small doses) exerted opposite effects from those of large doses (enough to dilate the pupils), where large doses paralyze and small doses stimulate the nervous system.

Atropa was used by the Eclectic physicians for conditions with impairment of the capillary circulation in any part of the body leading to congestion of internal organs, a soft, oppressed pulse, dilated pupils, pasty, soft skin, coldness of the extremities, and involuntary micturition.

In addition, Atropa is a remedy for pain and for spasm. Conditions accompanying spasmodic disorders, such as chorea and epilepsy, indicated it, as did febrile disorders, where hyperaesthesia caused delirium. It was observed to overcome spasm of the involuntary muscles, but was less effectual in spasm of the voluntary muscles.

- Cardiovascular Conditions: Atropa was considered superior to all agents in its immediate, and powerful positive inotropic and chronotropic action. Therefore, it was useful in cases where there was a "depression of the sympathetic nervous influence", as in syncope from asthenia or shock, hypovolemic collapse or in failure of the heart's action from cardiac drugs.

The specific indication for Atropa was enfeebled circulation with stasis of blood with dullness and drowsiness, dull eyes with dilated pupils. Marked contraction of the capillaries following its use was the common expectation.

- Endocrine Conditions: Atropa was considered a specific in diabetes insipidus.
- Gastrointestinal Conditions: Atropa was useful in spastic constipation, colic, and any spasmodic constriction of the digestive organs or gall bladder.
- Genitourinary Conditions: Belladonna was considered one of the most important remedies for genitourinary diseases by the Eclectics as it was observed to stimulate and at the same time relieve irritation of the urinary tract. It was the remedy in the congestive and early stages of kidney disease, with a sense of fullness, weight, and dragging in the loins.

It was also a specific remedy in urinary incontinence were enfeeblement of the pelvic circulation was the principal cause. However, it was not observed to give relief where the incontinence was secondary to vesical irritation. It was even used for dribbling urine in children as well as increased frequency in children with the marked pallor of countenance and dullness of eye being present, and the condition evidently depending upon "a cold." Diabetes insipidus was treated by applying an Atropa plaster and administering the drug internally.

In turn, Atropa was used as a diuretic in cases of urinary suppression secondary to spasm. Atropa was also used in acute nephritis to calm nervous irritation and contract dilated blood vessels. Tubular nephritis (early stage), scarlatinal nephritis, and all cases of renal capillary engorgement were also indications for Atropa. It was also observed to decrease albumin in chronic albuminuria as well as increased both the solid and watery urinary constituents in deficient secretion.

- Infectious Conditions: Perhaps in no class of diseases was the action of Atropa appreciated more than in the exanthemata where it would encourage the eruption and renal activity. Atropa was used as a child's remedy frequently but cautiously. Small doses were a well-accepted prophylactic against scarlatina . In both scarlet fever and measles it was nearly always indicated, where the more congestive the form the more satisfactory the effects of treatment. It was used to awaken children from a drowsy state or even unconsciousness in such illnesses. In turn, Atropa was also applied to quiet delirium.

Erysipelas with burning and deep redness of the skin, urticaria and erythema were often relieved by it as well.

- Male Conditions: The influence of Atropa was notable in spermatorrhea with enfeebled pelvic circulation.
- Neurological Conditions: Certain forms of neuralgia, particularly trigeminal neuralgia, were treated with Atropa, although other types of neuralgia would sometimes respond to it. Aconite was combined with Atropa if excitation of the circulation and increase of temperature also presented. It was often serviceable in chorea and in epilepsy, with congestion.
- Pulmonary Conditions: Atropa was a remedy for spasmodic asthma, whooping-cough, and nervous cough from laryngeal irritation. In whooping-cough, it was usually indicated in the latter stage to lessen the severity and frequency of paroxysms.

In various forms of sore throat, Atropa was an important remedy. Where sore throat presented with inflammation, swelling, soreness, difficult deglutition, dryness of the throat less fever, it was administered in alternation with aconite every half hour.

It was considered of great benefit in diphtheria, interfering with the formation of the membrane if given early in the disease.

- Topical Applications: No remedy was considered of more value by the Eclectics to check secretion of the mammary gland when prompt action is desired. It was a remedy for local or external inflammation, acute mastitis, inflammatory glandular swelling, buboes, gouty and rheumatic inflammations, etc.

Externally the ointment, or extract, has been applied locally in spasmodic stricture of the urethra, bladder and rectum, strangulated hernia, spasmodic contraction of the uterus, hemorrhoids, etc. Belladonna plasters, or the extract with vaseline, were applied to relieve pain in the early stage of abscesses, recurrent boils, neuralgia, and lumbago.

Current Medicinal Use:

Atropa is used for the relief of pain and spasm. Belladonna may be applied topically or taken internally to relieve spasmodic pain and inflammation. Atropa is also used as crisis control herb primarily for symptomatic treatment. It reduces glandular secretions including HCl and is indicated in gastrointestinal spasm secondary to ulcer, biliary dyskinesia, mucous colitis, vaginal secretions, eye secretions, etc.

Specific applications include dull, throbbing, congestive headache; gastrointestinal nausea and vomiting perhaps with diarrhea; deep-seated pain with spasm and/or inflammation (i.e. dysmenorrhea, sciatica, facial neuritis; whooping cough with spasmodic coughs and congestion and capillary impairment; spasmodic constipation; pharyngitis with redness, rawness, swelling and soreness with dysphagia and throat dryness; childhood exanthems (i.e. chicken pox, scarlet fever, etc.) in order to bring out the eruption, re-establish kidney function and eliminate congestion.

- Cardiovascular Conditions: The primary indication for the internal use of Belladonna is impaired capillary circulation and resultant blood stasis. If this capillary stasis is accompanied by mental stupor, dilated pupils and expressionless countenance, Belladonna is the most specifically indicated herb.

Atropa is also used in nervous heart complaints cardiac arrhythmia, cardiac insufficiency NYHA I and II. [314]

- Endocrine Conditions: Belladonna is also an excellent remedy for diabetes insipidus.
- Gastrointestinal Conditions: [315] Atropa is the gastrointestinal antispasmodic that outranks all others. Its effect is rapid and long lasting. It suppresses secretions having a particular value in hyperacidity syndromes although the motor effect of Belladonna is more marked than the antisecretory action. Therefore, its use is equally effective in all spasmodic conditions of the stomach, intestine and bile

ducts. Intestinal spasm with acute or chronic enterocoltits respond well to Atropa. Atropa works for chronic intestinal disease and spastic constipation.

- Genitourinary Conditions: Belladonna stimulates and relieves irritation of the kidneys. It is especially indicated in acute congestion of the kidneys.
- Gynecologic Conditions: Atropa can be combined with equal parts of Hyoscyamus, Valeriana and Opium tinctures for a fast and
- Hepatobiliary Conditions: Biliary dyskinesia responds better to Atropa than many other gallbladder remedies. At the least, Atropa should be added to the other gallbladder remedies to have a maximum effect. However, the effect is not rapid and will be inadequate in acute gallbladder colic. [317]
- Inflammatory Conditions: Atropa root has been utilized in the treatment of encephalitis. [318]
- Nervous Conditions: Atropine has been given in large quantities in the treatment of Parkinsonism. The dose is usually above the maximum is surprisingly well tolerated. A root preparation (Tremoforat by Klein) is recommended for all forms of Parkinsonism and senile tremors and other forms of abnormally increased motor function. Post-influenzal Parkinsonism particularly responds to treatment with Atropa.
- Pulmonary Conditions: Indications for respiratory spasmolytics include tight, breathless, non-productive coughing such as bronchitis as well asthmatic symptoms such as wheezing.
- Topical Applications: In naturopathic medicine, Atropa is added to medicinal plasters for neuro-vegetative disorders, hyperkinesis, hyperhidrosis, and bronchial asthma.

Pharmacy: Dr. Alschuler notes that small doses are essential, as these tend to be stimulating while large doses paralyze. Mills and Bone indicate short-term use only with the solanaceous plants. However, Weiss indicates that long-term medication will be required, often for several weeks or more for some conditions (i.e. 3-4 weeks for ulcers and gastritis).

In determining the therapeutic dose Weiss states that the dose should be such that there is just a slight dryness in the mouth and mild disturbance of vision, usually 10 gtt tid (he does not indicate strength although based on this amount it is likely a 1:10 tincture). From here the dose is slightly reduced and maintained. He also recommends taking the drops in Matricaria tea, particularly if long-term treatment is indicated.

1:10 tincture of leaves (0.03% atropine):

1-15 drops (USP 0.6-1.0 ml) total daily dose (Dr. Alschuler)

For ulcer, chronic colitis: 8 gtt tid for men, 6 gtt tid for women;

For persistent constipation, mucous colitis, fermentative dyspepsia (Weiss): 5 gtt tid

Extract USP (0.2 mg atropine): 15 mg total daily dose

IM injection: Scudder utilized a 1:1 fresh plant extract using one fifth to one drop. He would also use a hypodermic form of one grain

Suppositories: Suppositoria Spasmolytica I DRF and IIDRF (Germany)

Drug Interactions:

The antagonism of belladonna and opium now seems well established, both physiologically and clinically.

Contraindications: The solanaceous plants may be inappropriate in glaucoma, urinary retention, paralytic ileus, intestinal atony and obstruction, tachycardia, arrhythmia, and BPH.

Toxicity: 10 mg. Alkaloids; Do not use in large or continuous doses. Children are especially sensitive to the toxicity of belladonna. Glaucoma is a contraindication to the use of belladonna.

Signs of toxicity include dry mouth, flushing, skin hot and dry, mydriasis (pupil dilation), increased respiratory rate and volume, increased temperature in children, palpitations, increased pulse rate and blood pressure, incoordinate movements, incoherent speech, memory disturbed, disorientation, urinary urgency, difficult urination, eye pain, blurred vision, sensitivity to light, dysphagia, great thirst, nausea, vomiting, diarrhea, delirium, restlessness, confusion;

Later onset: depressed cerebral and neural activity, stupor, circulatory collapse, coma and death from centric respiratory paralysis.

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[312] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[313] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[314] Ibid

[315] Weiss RF. Herbal Medicine, 6th ed. hippodrates Verlag GmbH 1996. p. 52, 58, 304, 308

[316] Weiss RF. Herbal Medicine, 6th ed. hippodrates Verlag GmbH 1996. p. 52, 58, 304, 308

[317] Weiss RF. Herbal Medicine, 6th ed. hippodrates Verlag GmbH 1996. p. 52, 58, 304, 308

[318] Weiss RF. Herbal Medicine, 6th ed. hippodrates Verlag GmbH 1996. p. 52, 58, 304, 308

[319] Scudder

Avena sativa (A. officinalis)

Poaceae

Common name: Oat, Grouts

Habitat:

Botanical description: A 0.6 to 1.0 m tall erect plant with narrow, linear leaves. The flowering top appears as spikelets with 2-3 florets in loose panicles. The preparations of oat are the dried and chopped pieces of the stem, leaf sheaths and leaf blades. The seed is also harvested and eaten as a cereal grain.

Parts used: Aerial parts of the plant harvested just before it is in full flower during the milky stage. (Milky oat seed) When you pinch the top, a juice should pop out. This indicates the time for harvesting. The whole oats as steel cut oats or oatmeal is used topically.

Constituents [320]

- Soluble oligo- and polysaccharides: including saccharose, kestose, neokestose, beta- glucans, galactoarabinoxylans
- Minerals: Iron (39 mg/kg dry weight), Manganese (8.5 mg/kg dry weight), Zinc (19.2 mg/kg dry weight)
- Indole alkaloid: gramine (seed), avenine
- Silicic acid esters, Polyphenols, Flavonoids, Flavones (especially the flower), Carotenoids, Chlorophyll, Steroid saponins (avenacoside A and B (leaves)), Unusual amino acids (avenic acid A and B)
- Starch (60%)

Pharmacology:

The alkaloids are believed to account for oats' relaxing action, but this continues to be debated in Europe; the German Commission E monographs do not endorse this herb as a sedative. However, an alcohol-based tincture of the fresh plant has proven promising in cases of nicotine withdrawal. [321]

The avenacoside triterpenoid saponins possess strong in-vitro fungicidal activity.[322]

Medicinal actions: Antidepressant, nervous system trophorestorative, cardiac tonic

Traditional Medicinal Use:

Specific Indications and Uses: Nerve tonic, stimulant, and antispasmodic. Spasmodic and nervous disorders, with exhaustion; cardiac weakness; nervous debility of convalescence; spermatorrhea from the nervous erethism of debility; tensive articular swellings.[323]

King described this plant is a nerve-tonic, stimulant, and antispasmodic and considered it among the most important restoratives for conditions depending upon nervous exhaustion. Cook did not describe this plant.

- Cardiovascular Conditions: In enfeebled states of the heart, Avena was observed to act as a good tonic to improve the energy of the myocardium.
- Nervous Conditions: The Eclectics used Avena for the nervous exhaustion secondary to a variety of low fevers, and the secondary disorders arising from them such as decline in cardiac function, spermatorrhea, insomnia, etc.
- Male Conditions: In spermatorrhea, Avena was applied to those cases of debility following adynamic diseases, or in simple spermatorrhea when not due to self-abuse. Such an atonic state is demonstrable though nocturnal emission of semen. However, in cases related to prostatic irritation Avena was considered to be of less value, although was still used as a supportive herb.

Current Medicinal Use:

- Behavioral and Psychological Conditions: Avena is often used to aid people giving up tobacco or other addictive substances. In one study the use of Avena extract (1 ml qid) helped habitual tobacco smokers significantly decrease the number of cigarettes smoked in those who wanted to quit,[324] but was ineffectual in those without the desire to discontinue smoking.[325,326]

In regard to opium addiction, a small study demonstrated six addicts who completely quit, two who reduced their use and two without change in use after administration of Avena extract (2ml tid).[327] Whether or not Avena decreases cravings for these substances is unknown and many clinicians have failed to see this occur despite widespread claims and clinical reports to the contrary. It is possible that it is useful in drug addiction recovery simply because it helps to restore strength to the nervous system.

- Cardiovascular Conditions: Avena also feeds and activates the cardiac muscle and is most indicated in weak and insufficient hearts. Cardiac disorders, which are secondary to nervous irregularities, will respond the most favorably to Avena. Nervous palpitations and weak hearts (decreased contractility) may respond to administration of Avena.
- Dermatological Conditions: The seeds or grains of Avena are high in mucilage and are known to soothe inflammation of the skin. Oatmeal baths, compress and poultices are often recommended to relieve inflammation and pruritis of insect bites, eczema, Varicella, topical fungal infections and contact dermatitis.

- Gynecologic Conditions: Avena is a wonderful herb to support the nervous system during menopause and is indicated in menopause associated depression. [328]
- Musculoskeletal Conditions: Avena is also thought to lower uric acid levels. For this reason, Avena is often included in arthritic formulas as a long-term tonic herb for gout.
- Nervous Conditions: Avena is THE nervous system trophorestorative. It feeds debilitated, weakened nervous tissue. It is used in states of nervous exhaustion, exhaustion from drug overuse and addictions, and weakness of the nerves from chronic anxiety or illness.

Nervous trophorestoratives in general are used for nervous exhaustion, neuralgia, herpes infections, depression and insomnia after falling asleep, convalescence and neurasthenia. Neurasthenia encompassed a wider range of disorders than nervous exhaustion. In days before psychoanalysis and neurology, it included symptoms where the nervous tissues were seen to be affected such as neuralgia and neuritis, depression and anxiety states and neurosis. The trophorestoratives were thus often combined with other tonics and convalescent foods such as molasses, yeast and malt extract (now known as rich sources of the B vitamins), oatmeal and other cereals.[329]

Avena is both a trophorestorative *and* tonic. In regard to tonic herbs in general they are indicated in convalescence, debilitating conditions with or without anorexia and chronic fatigue syndrome. Avena may be a useful agent in paralysis and weakness associated with aging. Avena is a nutritive relaxant with a slight stimulating edge on the motor system. Taken over time, Avena will increase stamina and strength. The immediate effect of Avena is one of mild sedation and it is a good herb for hyperactive children.. Over time, Avena lifts the spirits and is a nourishing tonic that is often combined with Scuttelaria.

Avena is theorized to stimulate the limbic system and motor ganglia thereby increasing energy level and one's sense of well being. Susan weed describes Avena as "upping the amperage of the nervous system so you can carry more voltage."

Pharmacy:

According to Mills and Bone, the digestive capacity is the main determinant of dosage of tonic herbs. If the stomach and digestive function is deficient, then tonics may be given with or after meals. In severe cases, they may need to be taken with liquid meals. Dosage should be small and frequent. Long-term therapy is the norm. Similar application is used for a trophorestorative effect. [330]

Infusion: 1 heaped TB. (approx. 3 g herba) to 1 QT. Water; steep until at room temperature. Drink throughout the day.

1:5 Tincture of fresh plant, 25% EtOH: sig 1-5 ml TID

1:5 tincture of dried plant: sig 5 ml TID; weekly max. = 100 ml

Drug Interactions:

- **Opioid medications:** Avena may antagonize the effect of morphine as demonstrated in mice.[331]

Contraindications: Tonic herbs in general are to be used with caution in severe debility, particularly when associated with immune or digestive collapse; renal or hepatic failure; rampant cancer or strong chemotherapy treatments.[332]

Toxicity: None known.

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[320] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[321] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

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[328] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 154-5, 235, 245

[329] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 154-5, 235, 245

[330] Mills and Bone p. 155

[331] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 154

[332] Mills and Bone p. 155

Baptisia tinctoria

Leguminacea

Common name: wild indigo

Habitat:

Botanical description:

Part used: root bark, leaves

Historical use:

Energetics:

Constituents: [333]

- Water-soluble polysaccharide: in particular arabinogalactans
- Glycoproteins
- Quinolizidine alkaloids: including cytisine, N-methyl cytisine, anagyrine, sparteine isoflavonoids, formononetin
- Hydroxycoumarins: including scopoletine

Pharmacology:
The polysaccharides and proteins in wild indigo are believed to stimulate the immune system, according to *in vitro* experiments. The ethanol extract has had a significantly positive effect on the phagocytosis of human erythrocytes. It has also been found to raise the leukocyte count and to improve the endogenous defense reaction. Wild Indigo also has a mild estrogenic effect. [334] Wild indigo is rarely used alone and is a part of a popular product for colds and flu in Europe that combines the herb with Echinacea and Thuja. [335]

Medical actions: sialagogue, glandular stimulant, hepatic

Traditional Medicinal Uses:
Specific Indications and Uses: feeble vitality with tendency to disintegration of tissue; fullness of tissue, with dusky, leaden, purplish, or livid discoloration; tendency to ulceration and decay; sepsis; typhoid conditions; enfeebled capillary circulation; color of skin effaced by pressure and returns slowly; patient's face swollen and bluish, appearing like one having been frozen, or long exposed to cold, fetid discharges, with atony, and gangrene.[336]

Cook noted that the bark of the root was considered to act the same as the leaves, being antiseptic, with decided stimulating and moderate relaxing qualities, elevating the circulation and nervous action, yet without undue excitement. King described Baptisia as a gentle excitant and local tonic to the vessels implicated in the ulcerative process.

- ENT Conditions: Baptisia is of marked value in many forms of malignant sore throat. The dusky, leaden-colored, faucial ulcerations of scarlatina and tonsillitis indicated Baptisia.
  Putrid ulcerations of the mucous membranes of the nasal passages were considered and indication for Baptisia.
  In fetid discharges from the ears, the infusion was injected into the external auditory meatus.
- Gastrointestinal Conditions: King stated that Baptisia increases the secretions of the glands of the gastro-intestinal tract, although he noted that this action can be so violent as to produce gastroenteritis. Small doses have been employed as a laxative.
  All typhoid conditions, marked by the dusky appearance of skill and mucous tissues, were promptly benefited by this agent.
  Typhoid dysentery, with stools like "prune juice or meat washings," or dark, tar-like, fetid discharges, mixed with decomposed blood, respond to the action of Baptisia.
- Gynecological Conditions: In fetid leucorrhoea and ulceration of cervix uteri, especially with muco-purulent discharges, a douche of Baptisia has been found beneficial.
- Hepatobiliary Conditions: Baptisia was considered an active and efficient hepatic, stimulating the liver and biliary secretion.
- Infectious Conditions: It was said to be valuable in variola and cerebro-spinal meningitis.
- Inflammatory Conditions: It has been employed with good results in atonic varieties of acute rheumatism.
- Pulmonary Conditions: Diphtheria, with swollen and enfeebled mucous membranes, with free secretion, appearing either dusky or blanched, and accompanied by sloughing was considered a call for Baptisia.

- Topical Applications: Baptisia was first employed as a dressing for all kinds of ulcerations when there is a degenerate condition and a tendency to gangrene. In particular, Baptisia was used to treat mouth ulcers when accompanied by foul breath, loss of appetite, and general gastric disturbance.
  Sore nipples, erysipelatous, scrofulous, and syphilitic ulcers were treated with a decoction of fresh Baptisia. It was used to control irritable and painful ulcers, lessens their foul discharges, and overcomes putrescency. The greater the tendency to mortification, the more highly the remedy was valued. The leaves applied in fomentations have decreased induration and swelling of the female breast.

Current Research Review:

- **ENT:**
  - **Common cold:**[337]
    - Design: Randomized, double-blind, placebo-controlled, multi-center clinical trial
    - Patients: Two hundred sixty three patients with acute common cold
    - Therapy: Esberitox® - proprietary formulation of Radix echinaceae, Radix baptisiae, Herba thujae; sig 3 tabs TID x 7-9 days.
    - Results: Herbal remedy was found to be superior over the placebo. In the subgroup of patients who started therapy at an early phase of their cold, the efficacy of the herbal remedy was most prominent.

Pharmacy:
King noted that Baptisia loses much of its activity when dried or boiled, while Cook noted that Baptisia should always be dried before using.

Drug Interactions: No information is currently available from the selected resources

Contraindications: Cook stated that Baptisia should never be given when there is inward irritation or inflammation. In conjunction, Brinker states that Baptisia be avoided in cases of hyperemia due to empirical gastrointestinal irritation caused by baptioxine (alkaloid) and baptin (phenolic glycoside). Brinker also notes its potential for toxicity in pregnancy and during prolonged use.[338]

Toxicity: According to King, Large doses are dangerous, acting as an emeto-cathartic: large doses have caused an excessive flow of viscid saliva, ulceration of the pharynx, insomnia, restlessness, and ocular disturbances. It produces soft, mushy stools, accompanied by a sensation of soreness of the whole body. He also asserted that baptitoxine increases the respiratory movements, and in toxic doses kills by asphyxiation through paralysis of the respiratory centers.

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[333] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[334] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

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[338] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 199

Barosma betulina (Agathosma betulina) **Rutaceae**

Common name: Buchu

Habitat: This plant is native to S. Africa, Cape region.[339]

Botanical Description: The plant is a low shrub growing up to two meters. The leaves are rhomboid-ovate, 12-20 mm long and half as wide with small and large oil glands. The flowers have five whitish petals and brown fruits. The leaves have a pungent and spicy taste.

Parts Used: Leaves

Constituents: [340]

- Essential oil (2%):
  - Main component: monoterpene diosphenol
  - Other components: limonene, (-)-isomenthone, (+)-menthone, (-)-pulegone, terpinen-4-ol, p-menthan-3-on-8-thiol.
- Flavonoids: diosmin, rutin

Traditional Uses:[341]

- Buchu has been commonly used for urinary tract infection, dysuria, cystitis, urethritis and prostatitis. Other traditional uses include as a laxative, stomachic and carminative. The Hottentots use buchu as a perfume.

Energetics:[342]

According to Holmes: Barosma is primarily pungent and bitter, mildly astringent, hot and dry. Secondarily it is stimulating, restoring and stablizes movement. It enters the Kidney, Spleen and Urinary Bladder meridians. He states its functions as:

- ☯ Restores, strengthens and relaxes the urognential organs, leifies irritation and harmonizes urination: Indicated in Kidney qi insecurity and bladder qi constraint and Lin syndrome.
- ☯ Warms and invigorates the urogenital organs and intestines: Indicated in Kidney yang xu, Spleen yang xu.
- ☯ Restrains infection and clears toxins, dries mucous damp and arrests discharge: Indicated in Bladder and Kidney damp heat. Compare with Bu gi zhi (fructus Psoraleae)

Medicinal actions:

According to Cook: Diuretic, Antimicrobial/Urinary Antiseptic, Anti-inflammatory, Diaphoretic
According to King's: aromatic stimulant, tonic, diuretic, diaphoretic

Traditional Medicinal Uses:

According to King's[343]*:*

- Gastrointestinal Conditions: Barosma promotes the appetite, relieves nausea and flatulence

Genitourinary Conditions: (*Specific indications are in italics)* In regard to urinary secretion, Barosma increasees both the solid and water components. On the other hand, when the kidneys are excessively active, their action is restrained by Barosma. It is principally used in chronic diseases of the urogenital organs including *chronic inflammation of the mucosa of the bladder and urethra*, in urinary discharge with increased uric acid and incontinence associated with a diseased prostate. *Profuse muco/ mucopurulent discharge* and altered secretions from the urethral glands point to its use. *Acid urine, with continual desire to urinate but little relief occurs indicates Barosma*. In turn, long-standing cystic irritation whith the patient having difficulty in restraining his urine also indicates Barosma**.** Barosma relieves catarrh of the bladder from gonorrhea, irritation or gleet (mucous discharge from the urethra in chronic gonorrhea).

According to Felter:[344]

- Genitourinary Conditions: Felter suggested that Buchu is to be used in chronic mucopurulent inflammation of the kidney and bladder. Buchu stimulates the kidneys and increases the watery and solid constituents, although in cases of weakness of the kidney, the amount of watery discharge will be less. It relieves irritation of the bladder sphincter and increases the tone of muscles associated with the urinary system. Felter cautions that Buchu should never be used in acute disorders.

According to Cook:[345] *(Cook describes Barosma crenata with the common name Buchu)*

- Genitourinary Conditions: Buchu is a mild and diffuse stimulant with a relaxing nervine action. The summary of its effects are tonification. The indication for Buchu is in chronic catarrh of the bladder. Buchu should not be used in acut or sub-acute irritation as it is too stimulating.
  In regard to male genitourinary conditions, Buchu is indicated in stagnant conditions of the prostate with gummy discharges and aching through the penis and aspermatorrhea wher the seminal dischare is thin with a felling of impotence. For chronic gonorrhea, it is combined with Copaiba
  In all of these cases, Buchu decreases mucous secretion

- Gastrointestinal Conditions**:** Buch influences the mucous membranes of the stomach and uterus. It relieves sympathetic irritability and improves the tone of the stomach.

According to Ellingwood:[346]

- Genitourinary Conditions: Barosma acts directly upon the kidneys increasing both the watery and solid constituents of the urine. It is valuable when the water portion of urine is excessive. It relieves irritation of the bladder and urethra and is valuable in catarrh or the bladder, pyelitis and honorrhea. It is particularly helpful when bladder irritation is caused by excessive uric acid. By decreasing irritation of the urinary bladder sphincter, it increases tone of the muscular structure.

Medicinal use:

- Genitourinary Conditions: Barosma is a stimulating diuretic. The volatile oils irritate the glomerulus thus increasing GFR and creating a diuretic effect. Buchu is used to treat any inflammation or infection of the pelvic organs. To date no in-vitro effect against urinary pathogens has yet been observed. Nonetheless, historical and clinical experience indicates an antibacterial effect. This effect is presumed to be due to diosphenol which is excreted as a glucuronic acid conjugate. In this form, it may exert antibacterial effects. It is best indicated for cystitis with abnormally acid urine, frequency, but with little relief from voiding, and with mucopurulent urinary discharge. The volatile oils can be irritating to kidneys, which could explain its contraindication in acute disorders and limits its long-term use.[347] The clinical indications include renal lithiasis, renal inflammation, BPH, increased uric acid.

According to Mills and Bone:[348]

- Genitourinary Conditions: Although the alcoholic extract should some antimicrobial activity against typical microflora which cause UTI's, only the essential oil showed considerable activity against all the test organisms.

Current Research Review

- Search of Medline revealed no human trials as of 1/15/03

Pharmacy:

- Dried leaf:
  - 3-6 g qd or as infusion[349]
  - 1-2 g qd[350]
- 1:2 liquid extract: 2-4 ml qd[351]
- Tincture:
  - Tincture (strength unspecified) 2-4 ml TID[352]
  - 1:5 tincture: 5-10 ml qd[353]
- Infusion: 1-2 tsp/cup water infused for 10 min,TID[354]

Contraindications:

- Pregnancy (speculative) due to the high content of pugelone, a volatile mucosal irritant and uterine stimulant. It is found in significantly higher amounts in Barosma crenulata (oval buchu, which is often used as a substitute).[355,356]
- Acute genito-urinary tract inflammation and especially kidney inflammation d/t the presence of diosmin, diosphenol and pulegone. [357]
- All excess heat or acute inflammatory conditions d/t being hot and irritant. Breaks of several days are recommended every two weeks as continuous use may produce slight kidney inflammation.[358]

Toxicity: Buchu will darken the urine so warn patients. Also, gastrointestinal irritation may occur if taken on an empty stomach. No cases of toxic reaction have been reported

Betula pendula, B. alba, B.verrucosa

Betulaceae

Common name: Birch

Habitat:

Botanical description:

Parts Used: Bark and Leaves

Constituents: Flavonoids (up to 3%), sugars, volatile oil, resins, saponins, ascorbic acid

Medicinal actions: Diuretic, Anti-inflammatory, Alterative, Astringent

Medicinal use: Birch bark and leaves (leaves are best) contain flavonoids, sugars, vol. oil, resins, saponins and works by all four mechanisms as a diuretic. Birch (bark) is often used externally for its astringent properties. When added to an alkaline infusion [add bicarbonate] it becomes bitter and antiseptic. The flavonoids are thought to be responsible for the diuretic effects of this plant. It is most indicated in cystitis. It irrigates the urinary tract while exerting anti-inflammatory and antiseptic actions. It also causes sodium excretion. The high vitamin C content contributes to the diuretic effect and discourages urinary and renal calculi. If drunk slowly throughout the day, birch will help to break down stones and gravel. The volatile oils can be irritating to the urinary and respiratory tracts, but also lends an antiseptic action. The combined effect of the diuretic, anti-inflammatory and antiseptic actions is a gentle depurative useful in rheumatism, chronic skin rashes and metabolic toxicity.

Pharmacy: 1:5 tincture: 1-2 ml/day; for stones 6-8 ml/spread over entire day.
Decoction: 2-3 g/cup QD - TID [1 tsp. = 1g; 1TB = 2 g]]

Toxicity:

Borago officinalis

Boraginaceae

Common name: Borage

Habitat: Borage grows in waste areas and is cultivated.

Botanical description: Round stems that grow to about 1.5 feet are branched, hollow and succulent. The oval leaves are alternate, large, wrinkled, deep green and covered with white prickly hairs. In early summer the plant produces bright blue star-shaped flowers that have anthers that form a cone in the middle.

Parts used: Leaves, flowers, seeds

Identified Constituents:

- Pyrrolizidine alkaloids (PA, 2-10 ppm in commercial leaf samples) including lycopsamine, intermedine, amabiline, supinine; these alkaloids are not present in the seed.
- Saponins
- choline, mucilage, potassium and calcium salts, tannins

Medicinal actions: (leaf) diuretic, demulcent, emollient, refrigerant, adrenal restorative/adaptogen, galactagogue, expectorant, refrigerant

Pharmacology: Borage contains high amounts of calcium and potassium salts. These constituents promote osmotic diuresis thus aiding the filtration of waste by the kidneys.

The mucilage in the leaves of borage exert an reflex antispasmodic and soothing action on the lungs thereby acting as an expectorant in a dry, non-productive cough.

Medicinal use:

- Gynecologic Conditions: Borage is a galactagogue and will stimulate the flow of milk in nursing mothers. Borage works especially well for this purpose if the mothers are exhausted and even depressed (possible contributors to the deficient milk production). PA free is best for this application (see Shatavari, Galega, Foeniculum, Trigonella also for other galactagogue options)
- Immune Conditions: Borage helps the body to expel heat, especially heat generated from dry infections. Viral or bacterial infections, especially of the lungs, without perspiration will respond favorably to borage. The lungs will be soothed and spasm relieved. In addition perspiration will ensue. Borage also acts as a diuretic. As described above, the osmotic diuresis promotes flushing of toxins through the kidneys. This is another useful action of borage during infection and fever.
- Inflammatory Conditions: Borage acts as a restorative to the adrenal cortex. This is most likely due to its ability to prolong the action of corticosterone via a undetermined mechanism. This adrenal restorative effect contributes to its anti-inflammatory action. The mucilage may also contribute to the anti-inflammatory action of borage. The anti-inflammatory actions of borage are pronounced and have been effective in conditions such as pleurisy, arthritis, and inflammation of the gastrointestinal tract.

Fresh borage leaves and flowers have long been used as food. The plant has a cucumber-like fragrance and flavor and can be added to salad or steeped in water or wine. The seeds of borage are high in gamma linoleic acid (GLA). Borage seeds have become an important commercial source of this anti-inflammatory oil. Borage seed oil is useful in rheumatoid arthritis, eczema, cardiovascular disease, dysmenorrhea, etc.

- Topical Applications: Fresh borage leaves may be applied as a poultice externally for its anti-inflammatory action.

Pharmacy: dried herb

infusion:

2 tsp. /cup; 1 cup BID (Alschuler)

cold infusion extracts more mucilage (Dipasquale)

tincture:

1:5, 1-10 ml BID (Alschuler)

extract:

1:1, 25% alcohol: alcohol needs to be low to extract mucilage

Juice pulp from fresh leaves 10 ml BID

Seed oil:

500 mg capsule: 1-4 capsules daily for maintenance, larger doses for therapeutic use

Drug Interactions: [359]

- **Hepatotoxic drugs:** (i.e. anabolic steroids, phenothiazines, ketoconazole, fluconazole) due to additive effect of pyrrolizidine alkaloids (speculative).
- **Drugs that lower seizure threshold:** (i.e. Tricyclic antidepressants, phenothiazines) due to GLA content of the seeds.

Contraindications: Caution with Internal use or prolonged external use due to the presence of pyrrolizidine alkaloids. Internal use is contraindicated in children, pregnant or nursing mothers in patients with liver disease.[360]

Toxicity: Hepato-occlusive disease due to pyrrolizidine alkaloid toxicity. See Symphytum officinalis.

[359] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 47

[360] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 46

Boswellia spp. (B. carteri, B. papyrifera, B. serrata, B.thurifera) **Burseraceae**

Updated Fall 2002

Common name: Frankincense or Olibanum.

Habitat: (B. carterri) Somalia, parts of Saudi Arabia. (B. papyrifera) Sudan, Ethiopia. (B. serrata) Dry zones of India.

Botanical description: B. carteri is a richly foliated tree w/ alternating leaves. It grows w/ few roots, which are fused to the stony soil upon which it grows. The flowers are solitary, white or pale-white in color & later develop into a three part capsulated fruit, each w/ its own seed.

Part used: Bark & Trunk. Gum resin that exudes from incisions made in the trunk is collected after allowing it to harden (~3 months).

Energetics: Taste – Pungent, bitter; Sweet, astringent. Heating in nature. (-) Kapha & Vata. (+) Pitta. B. carteri has similar action to Myrrh, but is slightly stronger in action upon the lungs & CNS. Odor – Resinous, balsamic, woody.[361]

Constituents: [362]

- Volatile oil (5-9%): pinene, dipentene, phellanrene, others.
- Resins (60%): alpha-boswellic acid, 3-acetyl-ß-boswellic acid, others.
- Mucilages *(12%)*

Pharmacology:

- **Anti-Inflammatory action:** The gum oleoresin consists of essential oils, gum, & terpenoids. The terpenoid portion contains the boswellic acids. Boswellic acids, the biologically active ingredients of the gum resin of Boswellia serrata (Sallai guggal), have been shown to be specific, noncompetitive inhibitors of 5-lipoxygenase, the key enzyme for leukotriene biosynthesis. Boswellia inhibits pro-inflammatory mediators in the body by inhibiting the synthesis of leukotrienes. In contrast to NSAIDs, long-term use of Boswellia does not lead to irritation or ulceration of the stomach.[363] Boswellia blocks some parts of the complement pathway.

Medicinal actions: Externally – causes mild skin irritation. Internally – mild carminative**.** Anti-inflammatory. Anti-rheumatic. Alterative. Analgesic. Rejuvenative.

Current & Traditional Medicinal Use*:*

- **Historical use:** The black kohl powder (charred Frankincense) was used by Egyptian women to paint their eyelids. Also used as ingredient in perfumes, incense & in embalming preparations.
- **Anti-Inflammatory:** Boswellia was used for rheumatologic complaints, asthma, bronchitis, catarrh, cough, indigestion, laryngitis, skin care, wounds, to build weak immune systems, & to reverse depression. It has also been shown useful for inflammation of the GI, such as in chronic cholitis.[364]

Current Research Review:

- **Chronic colitis:** Gum resin of Boswellia serrata was found to be effective in the treatment of chronic colitis with minimal side effects in the dose of 900 mg QD in three divided doses x 6 weeks. Thirty patients were recruited. Control group received 3 g sulfasalazine QD in three divided doses x 6 weeks. Boswellic acids are thought to be responsible for decreasing the inflammation via inhibition of leukotriene synthesis. (The key enzyme for leukotriene biosynthesis is 5-lipoxygenase. Boswellic acids were found to be non-redox, non-competitive specific inhibitors of the enzyme 5-lipoxygenase).[365]
- **Ulcerative colitis:** Gum resin of Boswellia serrata was also found to be effective in the treatment of ulcerative colitis, grades II and III, in the dose of 350 mg BID x 6 weeks. Control group received Sulfasalazine, 1 g BID x 6 weeks. Boswellic acids are thought to be responsible for decreasing the inflammation via inhibition of leukotriene synthesis.[366]
- **Crohn's disease:** Boswellia serrata extract H15 was not found to be inferior to mesalazine in the treatment of active Crohn's disease. One hundred two patients were recruited. Authors concluded that considering both safety and efficacy of Boswellia serrata extract H15, it appears to be superior over mesalazine in terms of a benefit-risk-evaluation.[367]
- **Bronchial asthma:** The gum resin of Boswellia serrata was found to be effective in the treatment of bronchial asthma in the dose of 300 mg BID x 6 weeks. Forty patients were recruited. This was a double-blind, placebo-controlled study. Mechanism of action is thought to be through the inhibition of leukotriene biosynthesis by boswellic acids.[368]
- **Rheumatoid arthritis:**
    - Boswellia serrata extract H15 showed no measurable efficacy in the treatment of active rheumatoid arthritis in the dose of 3600 mg (9 tablets) QD. Seventy-eight patients were recruited, 37 of which were available for detailed efficacy and safety analysis. The study was placebo-controlled. Patients were also receiving NSAIDs, doses of which could be adjusted on demand. There was no subjective, clinical or laboratory parameter showing a significant

or clinically relevant change from baseline or difference between both groups at any time point of observation. The mean NSAID dose reduction reached levels of 5.8% (H15) and 3.1% (placebo). One patient in each group showed a good response in all parameters but 4 patients in each group worsened. The others showed no alteration of their disease. The authors concluded that controlled studies including a greater patient population are necessary to confirm or reject their results.[369]

- Preliminary double-blind trials have found Boswellia effective in relieving the symptoms of rheumatoid arthritis. Two placebo-controlled studies, involving total of 81 individuals with rheumatoid arthritis, reportedly found significant reductions in swelling & pain over the course of 3 months. In addition, a comparative study of 60 people over 6 months found that Boswellia extract produced effects comparable to oral gold therapy. Today, extracts are typically standardized to contain 37.5–65% boswellic acids. 150 mg of boswellic acids TID is the dose shown to be effective in these studies.[370]

- **Osteoarthritis:** Herbomineral formulation containing roots of Withania somnifera, the stem of Boswellia serrata, rhizomes of Curcuma longa, and a zinc complex (Articulin-F) produced a significant drop in severy of pain and disability score in the patients with osteoarthritis. Forty-two patients were studied over a period of 8 months. The study was placebo controlled. Radiological assessment did not show any significant changes.[371]

Pharmacy:

- Standardized extract (37.5-65% boswellic acids): 450-3600 mg qd, as reported in the current literature above.

Contraindications/Toxicity: Externally, B. carteri can cause mild irritation.[372]

[361] Frawley, David; Lad, Vasant. *Yoga of Herbs, The*. Lotus Press, Twin Lakes, Wisconsin, 1992:202.

[362] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001.

[363] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[364] Effects of Gum Resin B. serrata in Patients with Chronic Cholitis. *Planta Med* 2001 Jul;67(5):391-5.]

[365] Gupta I, Parihar A, Malhotra P, et al. Effects of gum resin of Boswellia serrata in patients with chronic colitis. *Planta Med* 2001;67(5):391-5).

[366] Gupta I, Parihar A, Malhotra P, et al. Effects of Boswellia serrata gum resin in patients with ulcerative colitis. *Eur J Med Res* 1997;2(1):37-43

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[368] Gupta I, Gupta V, Parihar A, et al. Effects of Boswellia serrata gum resin in patients with bronchial asthma: results of a double-blind, placebo-controlled, 6-week clinical study. *Eur J Med Res* 1998;3(11):511-4.

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[370] Etzel R. Special extract of *Boswellia serrata* (H 15) in the treatment of rheumatoid arthritis. *Phytomedicine*. 1996;3:91–94.

[371] Kulkarni RR, Patki PS, Jog VP, et al. Treatment of osteoarthritis with a herbomineral formulation: a double-blind, placebo-controlled, cross-over study. *J Ethnopharmacol* 1991;33(1-2):91-5

[372] PDR, 696.

Brassica nigra

Cruciferae

Common name: Black mustard, mustard

Habitat: Black mustard is native to the Mediterranean region and is cultivated worldwide.

Botanical description: The black mustard plant is a much branched herb that grows to a height of 3 feet. It possesses petiolate leaves pinnately divided with 2-4 blunt lobes and a large terminal segment on the lower segment and oblong and undivided on the upper part of the stem. The plant produces yellow flowers and erect follicles. The seeds of the plant are dark reddish brown and 1-1.5 mm in diameter.

Parts used: seed (medicinal and culinary), leaves(culinary)

Constituents: [373]

- Glucosinates are considered to be the most active constituent group. When the seeds are crushed andcombined with warm water (not with hot water - enzymes would be destroyed), or chewed, the glucosinates, particularly sinigrin, are hydrolyzed by enzymes into active compounds such as allyisothiocyanate (from sinigrin).

  Allyl isothiocyanate (AITC) is a constituent of cruciferous vegetables. AITC possesses numerous biochemical and physiological activities. It is cytotoxic and tumorigenic at high doses and also is a modulator of enzymes involved in metabolism of xenobiotics, including carcinogens. A major urinary metabolite, is N-acetylcysteine (NAC), a conjugate of AIT[374]
- Phenyl propane derivatives: including, among others, sinapine (choline ester of sinapic acid, 1%)
- Fixed oil (30%) , Sinapine , Sinapic acid, Fixed oil, Protein, Mucilage

Pharmacology:

As a skin irritant, it's mode of action is through the principle of counter-irritation or the ability to influence deeper regions of the body by reflex effects mediated by the nervous system. Mustard oil is highly corrosive and will cause blistering if applied for too long.[375]

Glucosinolates and their various transformation products alter phase I and I detoxification processes acting to reduce the production of carcinogenic compounds. It is best to ingest levels not in great excess because at these levels the effects are not fully known. However, these compounds may have a role in the prevention of cancer.[376]

Medicinal actions: Rubefacient, counter-irritant, stimulant, diuretic, emetic

Traditional Medicinal Use: no information currently available

Current Medicinal use:

- Gastrointestinal Conditions: The internal use of Brassica nigra is limited because of the gastric stimulation produced by the oils in the plant. The oils produce a counter-irritant effect on the mucosa of the stomach which causes a stimulation of the gastric smooth muscles. As a result emesis occurs. In smaller doses, the internal use of mustard seed powder will stimulate appetite and digestion. In addition, the oils of the seeds are bacteriocidal. Nonetheless, the emetic properties of this plant and the damaging effects on epithelial tissue contraindicate its internal medicinal use. Brassica niger (Black mustard) is stronger than Brassica alba (White mustard). For this reason, most mustard used for culinary purposes is white mustard.
- Topical Applications: The most common usage of mustard seed is as a powder. Mustard seed powder has been used historically as a topical application to create a counter-irritant effect. When Brassica nigra is applied topically in the form of plasters and poultices it creates an irritant, hyperemic effect. This causes localized vasodilation and even inflammation. The enhanced circulation through the area stimulates the tissues underlying the area of application.

  Mustard seed plasters are most often applied over the lungs in order to loosen congestion and to stimulate expectoration. Folk remedies throughout Europe and the United States have used mustard seed plasters and poultices to break up lung congestion and to prevent a common cold from developing.

  This same counter-irritant effect is utilized over rheumatic joints. The counter-irritant effect increases blood flow through the joint and consequently decreases joint edema. Mustard compresses will also help to relieve myalgia from hypertonic and inflamed muscles.

  Mustard foot baths (mustard seed powder in warm water) is an old remedy for headaches, colds and flus.

Pharmacy: External use only:

Plaster: 1TB dry mustard seed: 2-3 TB flour : small amount of warm water or milk (hot water inactivates the enzyme that converts glucosinolate into the active alkyl isothiocyanate)

Plasters need to be left on for at least 5 minutes, but the skin must be monitored closely for any signs of blisters. The plaster should never be left on any longer than 15-30 minutes. At the first sensation of burning felt by the patient, the plaster should be removed. The local counter-irritant effect may persist for 24-48 hours.

Compress and water baths: 1 tsp. dry mustard seed : 1 cup or greater of water

Contraindications: Mustard seed applications are contraindicated when there is severe circulatory damage and with varicose veins. Mustard seed is not to be used internally in amounts greater than those for culinary purposes.(Alschuler)

No applications for children under the age of six. Since mustard oils are absorbed by the skin, these preparations should not be used when kidney disorders exist.[377]

According to Brinker, Brassica is contraindicated in irritative or corrosive poisoning, gastrointestinal inflammation, pregnancy, externally over unprotected skin or for an excessive amount of time or in children under 6 years of age.[378]

Toxicity: The use of mustard seed externally, while effective, is dangerous. The oils found in mustard seeds causes dermal inflammation and erythema. Mustard seed applications if left on too long or over sensitive skin will cause vesication that can cause skin ulceration, necrosis and permanent scaring. This is particularly true with patients with sensitive skin and or vascular insufficiency. (Alschuler)

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[373] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[374] Jiao D. Identification and quantification of the N-acetylcysteine conjugate of allyl isothiocyanate in human urine after ingestion of mustard. Cancer Epidemiol Biomarkers Prev. 1994 Sep;3(6):487-92.

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[377] Blumenthal,M. The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines, First Edition, American Botanical Council . 1998

[378] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 105

Bryonia alba

Curcurbitaceae

Common name: white bryony

Habitat:

Botanical description: Perennial vine that climbs with tendrils. Large, palmate, 5-lobed leaves occur along the vine. Small clusters of pale green flowers are followed by black berries. A large, 6 cm diameter root supports the plant.

Constituents [379]

- Cucurbitacins: including cucurbitacins B, D, E, I, J, K, L, 23,24-dihydro-cucurbitacins, 1,2,23,24-tetrahydrocucurbitacins, 22-deoxycucurbitacins
- Cucurbitacin glycosides
- Triterpenes with unusual structure
- Sterols with unusual structure
- Polyhydroxy fatty acids: including 9,12,13-Trihydroxy-octadeca-10(E)-15(Z)-dienic acid.
- Lectins

Pharmacology: Various aqueous extracts of the drug display an antitumoral effect. The resin is a drastic purgative. The methanol extracts have a strong hypoglycemic affect. [380]

Medicinal actions: hypotensive, platelet aggregation, cathartic, counter-irritant, diaphoretic, cathartic, anti-rheumatic, hydragogue

Traditional Medicinal Use:

Specific Indications and Uses: Sharp, cutting, lancinating, tensive or tearing pain, with a sore feeling in any part of the body, particularly from serous inflammation or rheumatic pain, as if bruised, and always aggravated by motion and with muscular tension and tenderness on pressure; dry, sensitive skin; hard, moderately full, or hard, wiry, frequent vibratile pulse; headache on right side or head so sore that one cannot bear to be touched, with flushed right cheek above right malar bone (a prominent indication); frontal pain extending alongside of head to basilar region; hyperaesthesia of face or scalp; neuralgic pain with hyperaesthesia; irritative, hacking, rasping, or explosive cough, with soreness or bruised feeling of parts, and with laryngeal and suprasternal soreness and tenderness; abdominal pain with tenderness; ocular tenderness, increased by movement; tensive earache; articular and synovial pain, swelling, and tenderness; bowels 'constipated and urine scanty; burning in eyes and nose, with acrid nasal flow; apathy or lethargy short of dullness; tired, weary feeling, too tired to think; disposition to perspire on the slightest movement.[381]

According to King, the influence of Bryonia on the nervous system is marked and it was used to free the circulation, overcome capillary obstruction, lower fever and control pain. It is the remedy for inflammation of serous tissues, and is equally valuable in peritonitis and in synovial inflammations.

King also elucidated upon the quality of "aggravated by motion," which has long been a phrase applied to Bryonia cases. He found in these cases a lethargy induced more by a desire to remain quiet than one of dullness, as is noticeable when Belladonna is required. The patient is languid, torpid, tired, and has little inclination to go about. A general deficiency of nervous balance is observable, and every effort tends to induce perspiration.

- Cardiovascular Conditions: To the Eclectics, Bryonia was deemed to be a valuable heart tonic in weak and delicate individuals, who, by overwork and nervous excitation, bring on a depressed and irregular heart-action (heart-strain); and in organic heart pathology when exposure and rheumatic pain triggers a cardiac paroxysm. Bryonia, with rest in bed, was asserted to powerfully and rapidly influence a condition for the better.

In keeping with the general tropism for serous membranes, Bryonia was also valuable in pericarditis tending to hydropericardium.

- ENT Conditions: Bryonia was indicated for treatment of partial deafness from cold and tensive pains in the ear in children.
- Gastrointestinal Conditions: For indigestion where the food is slow to digest leaving a sense of heaviness as if a stone were in the stomach, Bryonia was the indicated remedy. Scudder called especial attention to its use in the abdominal tenderness and pain in typho-malarial fever, and zymotic diseases, and associated with Ipecac or Euphorbia in cholera infantum with abdominal tension and tenderness, or articular pain and swelling (Diseases of Children, p. 31).

In peritonitis the pain which indicated Bryonia was of the character of colic, but is marked by unusual tenderness and tension.

- Gynecological Conditions: Bryonia was considered a remedy for ovarian and menstrual dysfunction, with soreness on pressure. Acute mastitis when very painful and with elevated temperature, and the mammary glands are swollen, tender, and knotted, was treated with Phytolacca supported by Bryonia and Aconite.
- Hepatobiliary Conditions: In hepatic disorders with jaundice, highly colored urine, and developing pain upon pressure, King considered Bryonia an excellent remedy. Pains about the liver, as if the serous capsule were involved, have also been considered indications Bryonia.

- Musculoskeletal Conditions: The Eclectics utilized Bryonia in cases of acute or chronic rheumatism, especially where the joints were swollen and stiff, including rheumatism of the spine in children. Some Eclectics considered Bryonia to be an absolute specific in rheumatic swelling of the finger joints.
- Neurological Conditions: Apparently, Bryonia was considered for cases of facial neuralgia and peripheral neuropathy.
- Ophthalmological Conditions: Bryonia was used for rheumatic iritis, with aching soreness upon movement of the eyeball and in non-edematous puffiness of the upper eyelid.
- Pulmonary Conditions: Perhaps no remedy in the whole range of respiratory therapeutics was considered more valuable than this one to the Eclectic physicians, particularly as specific Bryonia. It was considered the remedy for the types of pain described in the specific indications and when there is a large quantity of mucus within the bronchioles, as evidenced by the loud mucous rales.

King describes a variety of pulmonary conditions indicating Bryonia in combination with other botanicals and at specific diseases stages. Thus, the monograph in his dispensatory is worth consulting for further information on the pulmonary applications of this herb.

Current Medicinal Use:

B. alba is a specific for the fever of rheumatic fever and for the cardiac complications of rheumatic fever. It is also useful in hypertension, pulmonary edema and pleurisy with associated cardiac insufficiency. *B. alba* is used for rheumatic conditions of the joints. It helps to relieve pain and stiffness by reducing fluid in the joint space.

Bryonia alba is considered to possess toxic effects in relatively small doses, and is therefore infrequently used. The efficacy of Bryonia preparations for the claimed applications in humans has not been scientifically documented.

- Cardiovascular Conditions: Bryonia may be a useful addition to anti-hypertensive formulas. The cucurbitacins appear to relax smooth muscle. Additionally, white Bryonia increases the elimination of water through diaphoresis, diuresis and laxation. The result of all of these actions is a reduction of blood pressure.

White Bryony may help to relieve edema around the heart, especially when this edema is the result of an infectious process.

Pharmacy: 1:10 tincture; 0.5 ml TID; 10 ml weekly maximum

Contraindications: Contraindicated in pregnancy, lactation or in someone with anal hemorrhoids.

Toxicity: The fresh root of Bryonia is extremely irritating, occasioning blisters when bruised and kept in contact with the skin, and causing serious gastro-intestinal inflammation when taken internally.

Symptoms of toxicity of the fresh or large doses of the dried root include: colic, vomiting, a profuse and uncontrollable diarrhoea, gastro-enteritis, cardiac depression with weak, thready pulse, fall of temperature, mydriasis, congestive headaches, dizziness, delirium, cold perspiration and collapse, death.[382]

Bupleurum falcatum — Apiaceae (Umbelliferae)

[much of this monograph is adapted from: Bone, K *Clinical Applications of Ayurvedic and Chinese Herbs*, (Queensland, Australia: Phytotherapy Press); 1996:21-24.]

Common name: Chinese thoroughwax, Hare's Ear Root, Chai hu

Parts used: Root

Historical Use: Bupleurum has been of the Chinese herbal formulary for many centuries.

Identified Constituents:[383]

- Triterpenoid saponins known as saikosaponins (up to 2.8% saikosaponins a, b1-4, c, d, f)
- Polysaccharides (bupleurans)
- Other constituents: Coumarin, Flavonoids, Polyacetylenes, Saikogenins, Polyhydroxy sterols, Trihydroxy fatty acid, Lignan, Saikochromone

Pharmacology[384]

- Lipid lowering effects in hyperlipidemic animals
- Saikosaponin (a) has been shown to inhibit platelet aggregation and thromboxane formation
- Oral doses are absorbed only 1/10th as much as injected doses
- Increases phagocytosis[385]

Pharmacology: Bupleurum has a variety of anti-inflammatory effects. The saikosaponins enhances the activity of corticosterone by inducing liver enzymes involved in the activation of corticosterone (A and B) and by stimulating adrenocortical function (stimulating ACTH- C and E).[386, 387] Both of these effects lead to an overall anti-inflammatory action. Saikosaponins also suppress granulation tissue [388] and inhibits prostaglandin E2 production (in-vitro) [389] both of which further help to explain the anti-inflammatory effect of *Bupleurum falcatum.*

The saikosaponins are also hepatoprotective. Pre-treatment with these saikosaponins inhibits acute and chronic toxic effects of liver toxins such as carbon tetrachloride.[390]

When injected, the saikosaponins exert anti-tussive effects as strong as those of codeine via their action on the CNS.[391]

Oral doses of Bupleurum falcatum transiently increase blood glucose, bile output and bile salt content (and thus lower cholesterol).[392] It has been suggested that saikosaponnins and saikogenins lower cholesterol by increasing cholesterol excretion in the bile and may increase hepatic protein synthesis.[393] Administration of Bupleurum to hyperlipidemic animals reduced cholesterol levels.[394]

Saikosaponin a and d (considered to be the most active saikosaponins) demonstrate anti-tumor effects in-vitro.[395]

Saikosaponins undergo enterohepatic circulation and fecal excretion. Blood levels of saikosaponins from oral doses are 1/10th that of injected doses.[396]

Medicinal actions: hepatoprotective, anti-inflammatory, anti-tussive, diaphoretic, carminative, alterative, choleretic, antipyretic, mild sedative, hyperglycemic

Energetics:
bitter, slightly acrid, cool
enters the liver, gall bladder meridians
-resolves lesser yang patterns
-smoothes liver qi
-raises yang qi

Traditional Medicinal Use: Neither Cook nor King described this herb.

Current Medicinal Use: *Bupleurum falcatum* has been one of the most important drugs in traditional Japanese and Chinese medicine. It has been used for the treatment of chronic hepatitis, nephrosis and auto-immune diseases. *B. falcatum* is also used in chronic inflammatory diseases especially involving the liver and kidneys. Chronic autoimmune disease such as systemic lupus erythematosus and multiple sclerosis are particularly responsive to this plant.

- Gastrointestinal Conditions: The saponins may act by inhibiting gastric acid secretion and have been found to improve the integrity of gastric mucosa in rats. [397]
- Genitourinary Conditions: Bupleurum given to patients with poor fluid excretion produced a diuretic effect. [398]
- Hepatobiliary Conditions: Acute and chronic liver disease, toxic damage to the liver and hepatic insufficiency are all indications for *B. falcatum*. A clinical trial in chronic active hepatitis used oral doses of saikosaponins at 6 mg/day (equivalent to 0.3 g of root/day).

Serum liver enzymes were reduced significantly when measured at 3, 6 and 12 months.[399] The saponins stimulate immune functions and injections of Bupleurum given to Hepatitis B patients resulted in clinical improvement.[400]

- Infectious Conditions: Uncontrolled trials demonstrated strong antipyretic effects while numerous cell studies show immunomodulating effects.[401, 402, 403]. This combined with its macrophage enhancing activity[404] make it useful in the treatment of colds and flus. Chronic infections and inflammatory diseases are indications for *B. falcatum* because of its anti-inflammatory, adrenocortical-sparing, hepatoprotective and immunostimulatory actions. Naturopathically speaking, persons with chronic disease who have some stage of adrenal exhaustion and hepatic insufficiency are likely to benefit from *Bupleurum falcatum.*

Current Research Review:

- **Hematology:**
  - **Thrombocytopenic purpura:**[405]
    - Abstract is unavailable on Medline.

Pharmacy: Traditionally used in formulation. Dr. Dipasquale prefers to use this herb in the second phase of female biphasic formulas to lift the spirits and improve hepatic function.

Dried root: 1.5-6 gm/day in divided doses as a decoction or in capsules
1:5 tincture: 5-20 ml/ day
1:2 fluid extract:3-12 ml/day in divided doses
3 -120 mg saikosaponins/day in divided doses

Drug Interactions: No information is currently available from the selected resources.

Contraindications: No information is currently available from the selected resources. In TCM, Bupleurum is contraindicated in conditions of the deficient yin of liver fire rising.

Toxicity: *Bupleurum falcatum* is slightly sedating in some individuals and may causes increased bowel movements and flatulence.

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Calendula officinalis — Asteraceae

Common name: Marigold, Pot marigold, calendula

Habitat: Native to Europe; common throughout the world, mostly cultivated.

Botanical Description: An annual plant with branched stems. Leaves are pale green, and spatulate. The flower heads are bright yellow or orange with ray and tubular florets surrounding a crown shaped receptacle.

Parts Used: Ray florets (but whole flower is usually used)

Historical uses: Calendula has been used in Europe for a long time as culinary plant. The bright orange flowers are a colorful addition to salads and stews. Calendula was also thought to comfort the heart and soothe agitation. Calendula has a long history of use for headaches, jaundice, red eyes, and toothaches. The marigold was thought to draw evil spirits out of the head and strengthen the eyesight.

Constituents:

- flavonoids, found in high amounts in calendula, account for much of its anti-inflammatory activity
- triterpene saponins
- carotenoids, xanthophyls
- calendulin (a bitter resin)
- volatile oil, mucilage, salicylic acid, polysaccharide,

Medicinal actions: Anti-inflammatory, anti-spasmodic, vulnerary, sytptic, antiseptic, antiviral, antiprotozoal, anti-fungal, anti-bacterial, cholagogue, depurative, diaphoretic, lymphatic, phytoestrogenic

Traditional Medicinal Use:

Specific Indications and Uses: Locally, to wounds and injuries to prevent suppuration and promote rapid healing.
Internally, to aid local action, and in chronic suppuration., capillary engorgement, varicose veins, old ulcers, splenic and hepatic ongestion.[406]

Cook described the flowers of Calendula is a mild (no explosive action) diffuse (stimulates circulation), stimulating (stimulates tissue functioning) yet relaxing (anti-spasmodic) plant, expending their power chiefly upon the nerves, and moderately upon the capillary circulation. He noted that it is a vaso-motor stimulant, and relieves capillary engorgement of the mucous tissues and skin.

- Nervous Conditions: Like all other articles of such qualities, they are nervine and antispasmodic; and have been used in hysteria and general nervousness, and to promote moisture at the surface.
- Gynecological Conditions: King asserted that Calendula was reputed to act beneficially in dysmenorrhea, slightly promoting menstruation. Cook praised the use of Calendula in vaginitis, endometritis, all uterine and vaginal abrasions, and non-malignant ulcerations, leucorrhoea, and as an intra-uterine wash.
- Topical Applications: As a local application, Calendula was used to promote granulation and to advance the healing of contused wounds. Calendula was also used successfully after surgical operations to induce healing by first intention, to wash abscess cavities, to prevent cicatrization from burns and scalds, in eczematous and ulcerative skin diseases, vaginitis (wash or tampon), endocervicitis, gonorrhea, non-specific urethritis, and mercurial stomatitis.

Current Medicinal Use:

- Gastrointestinal Conditions: Calendula is antiinflammatory for the G.I. tract
- Infectious Conditions: The anti-fungal properties are only found in a tincture (not in the succus or oil) because it is the resins that are anti-fungal and these need 90% EtOH for extraction. The antiseptic (demonstrated anti-bacterial, anti-viral and anti-parasitic activity has been demonstrated in several in-vitro studies) and immunostimulating properties are derived from the polysaccharides and volatile oil. Calendula is mildly anti-viral and seems to have a tropism for the lower half of the body, versus Baptisia which works best on the head and neck. Both of these herbs combine synergistically with Echinacea.
- Hepatobiliary Conditions: The calendulin resin gives Calendula its cholagogue activity which, in turn, contributes to the depurative action.
- Inflammatory Conditions: The saponins and resins decrease tissue swelling, increase capillary perfusion of tissue and therefore decrease inflammation. The diaphoretic action of Calendula is mild and is secondary to the increase in peripheral circulation.
- Lymphatic Conditions: As a lymphatic stimulant, Calendula is most specific for the lymphatics in the breast and pelvic tissues. This may follow the fact that the saponins in Calendula have mild phytoestrogenic activity, thus directing the herb to these areas.

Calendula stimulates the drainage of enlarged, inflamed lymph nodes. For this reason, calendula is good for pre- and post-op support. It combines well with Phytolacca as poultice to drain cysts such as fibrocystic breasts. The main lymphatic herbs can be classified as follows:
Phytolacca: Neck, Breast, Arms, Glands
Gallium: Most systemic, excellent in the throat, pelvic area, urinary tract
Calendula: Pelvis and Breast

- Topical Applications: Calendula is antiinflammatory externally especially when used in a poultice. The styptic and vulnerary actions are due to the xanthophyls (which stimulate granulation tissue), the mucilage and volatile oil. The xanthophyls are water soluble. Thus, calendula succus and tea can be used topically for wound healing and internally for hemorrhage, inflammation of the throat, nasal passages, conjunctivitis (as an eye wash), otitis, proctitis and colitis (esp. as suppositories) gastritis and vaginitis. Calendula is most indicated in chronic and acute inflammatory skin lesions, the symptoms of which may include itching, burning, and swelling. Experiments on animals suggest that calendula cream exerts a wound-healing and anti-inflammatory effect, [407] but double-blind studies have not yet been conducted.[408] Calendula cream is also used to soothe hemorrhoids and varicose veins, and the tea reportedly reduces the discomfort of mouth sores.

Current Research Review:

- **Dentistry:**
  - **Chronic catarrhal gingivitis:**[409]
    - Design: Clinical trial
    - Patients: Patients with chronic catarrhal gingivitis
    - Therapy: Calendula immobilized on polysorb in the nearest period after treatment and later
    - Results: Highly effective

Pharmacy: It is especially effective for skin conditions (excluding fungal conditions) as a fresh plant succus.
Succus in 25% EtOH: 3-5 ml TID
1:5 90% EtOH tincture: 1-2 ml TID
Fluid extract 1:1 40% EtOH: 0.5-1 ml TID
Infusion 1-4 g TID [1tsp = 0.8g]
Specific tincture 1:3 96% EtOH, macerate 2 weeks; sig 1-3 ml/day;
Creams, ointments, oils, poultices, suppositories

Contraindications: Brinker speculates that Calendula be avoided during pregnancy due to the uterine stimulant effect of cyrptopine.[410]

Toxicity: Calendula is an extremely safe herb without documented side-effects.

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Camellia sinensis

Theaceae

Common name: Tea, Green tea, Black tea

Habitat: *Camellia sinensis* is cultivated in Indonesia and China, India, Japan, and Sri Lanka.

Botanical description: A 15 m high shrub . The plant bears oblong-ovate, dark green, shiny leaves with distinctly serrate margins. Scented flowers up to 3 cm in diameter with 5 or 6 petals and numerous yellow stamens appear singly.

In commerce, the young shoots are picked. To make green tea, the young leaves are allowed to wilt and are then rolled. This rolling exudes some of the cell sap and the leaf structure is partly broken down. To make black tea, the leaves are then fermented in order to convert the polyphenols to phlobaphenes and for aromatic substances to be formed. The fermentation occurs as the result of the leaf enzymes, particularly polyphenol oxidase, on tannins and catechins. To make green tea, fermentation is omitted and instead the leaves are steamed ("roasting" in the Chinese method and "sweating" in the Japanese method) which inactivates the enzymes and thus preserves the polyphenols. Red tea (oolong) and yellow tea are partially fermented tea. The leaves are then dried by hot air.

Parts used: Young leaves (poor quality tea, i.e. instant tea is made from the older leaves)

Historical use: Green tea has been drunk throughout Asia since at least 3000 BC to promote longevity, to improve mental functions, and to prevent disease.

Constituents: Flavonols(polyphenols) 5%-10%, Theogallin 2%-3%, Quinic acids 2%, Methylxanthines (caffeine 3%-5%, theophylline 0.02%, theobromine 0.1%), Theanine 4%-6%, Carotenoids, Trigalloylglucose, Minerals 6%-8%: depending on soil content Al and Mn are particularly prominent; volatile oils, vitamins, and caffeine

Green tea:

Polyphenols: catechins (30%-42% of the extracable solids), gallocatechins (including epigallocatechin (EGC) and epigallocatechin gallate (EGCG) [411, 412])

Black tea: The unique constituents in black tea are the result of oxidation and condensation of catechins.

Theaflavin, Theaflavic acids, Thearubigens: including proathocyanidins, Volatile components

Pharmacology: Tea polyphenols are absorbed after oral ingestion and are easily detected in blood, urine and feces. The actions of polyphenols are thus local rather than the result of indirect gastrointestinal effects.[413]

The tea polyphenols, especially epigallocatechin gallate (EGCG) directly scavenge free radical oxygen. Green tea polyphenols have been shown to stimulate the production of several immune system cells, and have antibacterial properties—even against the bacteria that cause dental plaque. [414] EGCG stimulates B cell proliferation in-vitro.[415] ECGC and epicatechin directly damage bacterial membranes and are thereby bacteriocidal compounds.[416] Tea catechins are also protozoacidal[417] and virucidal (including influenza[418] and HIV[419]). Tea and coffee extracts demonstrate antibacterial activity against *Vibrio cholerae, Salmonella typhimurium,* and *Salmonella typhi*[420] all of which are associated with bacterial induced diarrhea.

Polyphenols increase antioxidant and phase II detoxification enzyme activities in a variety of mouse organs.[421] UDP-glucuronosyl transferase, a phase II enzyme is elevated in rat livers after treatment with green tea.[422] Polyphenols bind to cytochrome-P450 in rat livers and indirectly block the activity of cytochrome-P450-dependent enzymes. This may result in decreased toxic and carcinogenic intermediates that are formed in livers with up-regulated phase I of detoxification.[423] The in-vivo antioxidant activity in humans of green tea is six times greater than that of black tea.[424]

Tea polyphenols, especially the catechin gallates, may protect tissues from tumor development by enhancing gap junction communication which is otherwise inhibited in tumor development.[425] Tea polyphenols also inhibit tumor promoter binding to mouse skin presumably by sealing receptors for these promoters.[426] EGCG directly binds to certain carcinogens.[427] When EGCG is given to mice, lung metastasis of experimental and spontaneous tumors is prevented.[428] Green tea polyphenols are antimutagenic[429] and reduce the occurrence of chromosome alterations from exposure to mutagens.[430]

There is some evidence that green tea constituents might help protect the skin from sun damage and sunburn. [431] Unlike normal sunscreen preparations, green tea does not physically block ultraviolet light. Rather, it seems to protect cells from damage.
Green tea extract is radioprotective especially against UVB-induced carcinogenesis.[432] Catechin gallates selectively inhibit 5-dihydrotestosterone in-vitro.[433] 5- dihydrotestosterone is associated with benign prostatic hyperplasia, prostate cancer and male pattern baldness.

Caffeine intake causes wakefulness and sleep latency. Caffeine antagonizes adenosine's sympathetic nervous stimulation of the vascular system, hear, kidney, and adipose tissue. Adenosine inhibits neuronal activity and behavior by inhibiting pre-synaptic neurotransmitter release and by inhibitory binding to post-synaptic neurons. Caffeine is structurally similar to adenosine and therefore counteracts the inhibitory effect of adenosine. However, chronic caffeine intake may cause an increase in the number of adenosine receptors. Consequently, larger amounts of caffeine are required to maintain the caffeine antagonism of adenosine which may explain the habituation effect experienced by some users of caffeine-containing beverages. Additionally, if the caffeine intake is suddenly withdrawn or reduced, the adenosine effect is intensified resulting in symptoms of caffeine withdrawal.[434]

Caffeine may cause transitory hypertension and arrhythmias in some individuals, however evidence that long-term administration of caffeine causes these conditions is lacking.[435]

Tea polyphenols block oxidation of LDL in-vitro.[436] Green tea consumption by humans (especially more than 10 cups per day) is associated with decreased total serum cholesterol, LDL, VLDL, triglycerides and increased HDL.[437]
There is theoretical, but no clinical evidence for tea to promote the formation of calcium oxalate kidney stones because caffeine induces calcium excretion and tea is contains oxalates.[438]

The essential oil of tea exerts a most powerfully stimulating and intoxicating effect. In China, tea is seldom used till it is a year old, on account of the well-known intoxicating effects of new tea, due probably to the larger proportion of essential oil contained in the freshly-dried leaf (King).

Drug Interactions: Drug interactions exist with warfarin, ephedrine, MAO inhbitors, adenosine, clozpine, barbiturates, benzodiazepenes, β-blockers, phenylpronaloamine, lithium, aspirin, fluoxamine, a variety of antibiotics, OCPs, cimetidine, phenytoin, alcohol and adriamycin. See Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p189-191 for more detailed information.

Medicinal actions: Antioxidant, Anti-tumor and anti-cancer, Stimulant, Anti-cholesterolemic, Immunostimulant and antimicrobial Anticariogenic (resists tooth decay)

Traditional Medicinal Use:
Camellia was considered a mild stimulant and astringent by the Eclectics.

- Inflammatory Conditions: The Eclectics used Camellia in fevers and inflammatory diseases, when it was desired to check sleep. In colds, catarrhs, and slight attacks of rheumatism, the warm tea was taken as a diluent, diuretic, and diaphoretic. [439]

Current Medicinal Use:

Green tea is a good stimulant. It does possess caffeine and, in most people, will cause stimulation of the central nervous system. In some individuals, a paradoxical sedation effect may occur upon consumption. This may the result of other compound in the plant which cause CNS sedation. In general, the stimulatory effect from tea is less pronounced than that from coffee mainly due to the lesser caffeine content (on average, there is 50 mg of caffeine per cup of black tea and even less per cup of green tea versus 50 to 150 mg of caffeine per cup of coffee).

Green tea has been a recent focus of attention in both research and use since the late 1980's. From both the research and the historical use of green and, to a lesser extent, black tea, several clinical indications for this plant have emerged.

- Cardiovascular Conditions: Green tea mildly guards against cardiovascular disease in many ways, especially when consumed in large quantities (10 cups per day). Green tea lowers total cholesterol levels and improves the cholesterol profile,[440] reduces platelet aggregation, and lowers blood pressure. [441] However, not all studies have found that green tea intake lowers lipid levels. [442] While some studies show that green tea is an antioxidant in humans, others have not been able to confirm that it protects LDL cholesterol from damage.[443] Oxidation of LDL cholesterol is thought to be important in causing or accelerating atherosclerosis.
- Hepatobiliary Conditions: Green tea might prevent liver disease. [444] Researchers found that on average individuals with high intake of green tea (10 cups or more of green tea per day) had lower levels of liver enzymes. Elevated liver enzymes occur with various liver diseases, so this data suggests that green tea might helpful in treating hepatitis and alcoholic liver disease.
- Gastrointestinal Conditions: Green tea given by capsule reduced fecal odor and favorably altered the gut bacteria in elderly Japanese living in nursing homes.[445] The study was repeated in bedridden elderly and green tea again was shown to improve their gut bacteria.[446]
- Infectious Conditions: Finally, green and black tea possess significant anti-microbial effects against bacteria, protozoa, and viruses. These effects make green tea useful for people with immunodeficiency syndromes (both to help prevent infection and to combat fatigue) and in persons with exposure to infectious organisms. In addition, green tea is an effective way to prevent tooth decay.
- Metabolic Conditions: Green tea is an excellent source of anti-oxidant compounds. Regular consumption of green tea will reduce free radical damage and will promote active detoxification. Similarly, people with high environmental exposure to toxic compounds would be well served to consume green tea regularly for its anti-oxidant and selective phase I down-regulating effects.
- Neoplastic Conditions: The anti-cancer effects of green tea complement the antioxidant effects. Green tea is an excellent beverage for people with cancer, with a personal history of cancer, and/or with risk factors for the development of cancer.

  The polyphenols in green tea have also been associated with reduced risk of several types of cancer in humans. [447] In a double-blind study, people with leukoplakia took 3 grams of mixed oral and topical green tea or placebo for 6 months. Those in the green tea group had significant decreases in the pre-cancerous condition compared to placebo.[448]
- Pulmonary Conditions: There is theoretical grounds for using green tea in the treatment of asthma. Green tea contains theophylline which is a smooth muscle relaxant. However, green tea contains 0.02% theophylline. A typical dose of 3 gm of green tea therefore contains 0.06 gm of theophylline. The allopathic theophylline is administered at 10 mg/kg/day. For a 150 pound

person (68 kg), a daily dose of theophylline would be 680 mg theophylline. To achieve this dosage would require consuming approximately 33 gm of green tea per day. This is certainly possible in some individuals if they love green tea!

Current Research Review (2000-2002)

- **Endocrinology**
  - **Obesity:**[449]
    - Design: Open multi-center clinical trial
    - Patients: Moderately obese patients
    - Therapy: The green tea extract AR25 (80% ethanolic dry extract standardized at 25% catechins expressed as epigallocatechin gallate) x 3 months
    - Results: Body weight was decreased by 4.6% and waist circumference by 4.48%. AR25 is thought to exert its activity by inhibition of lipases and stimulation of thermogenesis.
- **Cardiology:**
  - **Vasodilation:**[450]
    - Design: Randomized controlled clinical trial
    - Patients: 21 patients with mild elevations in serum cholesterol or triacylglycerol (triglyceride) concentrations.
    - Therapy: 5 cups of black tea qd x 4 weeks.
    - Results: Brachial artery vasodilator function was measured. The results showed significant and consistent increase in endothelium-dependent and independent dilation. One of the mechanism by which black tea may reduce cardiovascular risk is via improved vasodilator function of conduit arteries.
  - **Hemostasis and cell adhesion:**[451]
    - Design: Randomized controlled cross-over clinical trial
    - Patients: Twenty two subjects
    - Therapy: 5 cups black tea qd x 4 weeks.
    - Results: Black tea resulted in lower soluble p-selectin, which provides a potential mechanism for cardiovascular benefits of regular tea ingestion.
  - **CAD:**

    Study 1:[452]
    - Design: Randomized controlled crossover clinical trial.
    - Patients: Sixty six patients with proven coronary artery disease.
    - Therapy: Black tea - 450 ml once to measure short-term benefits. Black tea – 900 ml x 4 weeks to measure long-term benefits.
    - Results: Both short- and long-term tea consumption improved endothelium-dependent flow-mediated dilation of the brachial artery. Plasma flavonoids increased after short- and long-term tea consumption. It was concluded that black tea reverses endothelial vasomotor dysfunction, partly explaining the association between tea intake and decreased cardiovascular disease events.

    Study 2:[453]
    - Design: Randomized, controlled, cross-over clinical trial
    - Patients: Forty nine patients with CAD
    - Therapy: 450 mL of black tea or water, followed by 900 mL of tea or water qd x 4 weeks
    - Results: Acute and chronic black tea consumption does not affect ex vivo platelet aggregation in patients with CAD. These findings suggest that an effect of tea flavonoids on platelet aggregation is unlikely to be the explanation for the reduction in risk of cardiovascular events noted in epidemiological studies.
  - **Anti-oxidant potential:**

    Study 1:[454]
    - Design: Randomized controlled clinical trial
    - Patients: Nine healthy patients, 26-59 yo, 1 male, 8 females.
    - Therapy: Day 1 – no tea, days 2-3 – black tea with milk or black tea alone at hourly intervals between 9am and 14 pm.
    - Results: Subjects who consumed black tea without milk had ferric reducing anti-oxidant power (FRAP) increased by 76% measured at 15pm. Heavy consumption of black tea appears to elevate circulating anti-oxidant potentials in vivo, the effect which appears to be negated by the drinking of tea with milk.

    Study 2:[455]
    - Design: Clinical trial
    - Patients: Not stated in the abstract
    - Therapy: Tea with milk, tea without milk, and lemon tea

- Results: Significant decrease in serum lipid peroxidation level was observed half hour after ingestion of lemon and tea without milk. The decrease is much significant in case of lemon tea than tea without milk after half hour or one hour. Interpretation: tea without milk is a good anti-oxidant, and addition of lemon to tea increases its anti-oxidant potential.

Study 3:[456]

- Design: Cross-over clinical trial
- Patients: Twenty-one healthy volunteers (10 male, 11 female)
- Therapy: Black tea, green tea (2 g tea solids in 300 ml water) or water with or without milk – single dose.
- Results: Consumption of black tea resulted in a significant increase in plasma antioxidant activity reaching maximal levels at about 60 min. A larger increase was observed after consumption of green tea. As anticipated from the higher catechin concentration in green tea, the rise in plasma total catechins was significantly higher after consumption of green tea when compared to black tea. Addition of milk to black or green tea did not affect the observed increases in plasma antioxidant activity.

Study 4:[457]

- Design: Randomized controlled clinical trial.
- Patients: Twenty healthy men
- Therapy: 4 hot drinks – green tea and black tea (each at a dose equivalent to 4 standard cups).
- Results: Black tea has a mild acute effect on ex vivo lipoprotein oxidation in human serum.

- **Inflammation, hemostasis, and endothelial markers:**[458]
  - Design: Randomized controlled clinical trial
  - Patients: Sixty-four healthy smoking volunteers
  - Therapy: Black tea, green tea, green tea polyphenol isolate and mineral water x 4 weeks (13-16 per group).
  - Results: Tea drinking had no effect on the levels of inflammation, haemostasis and endothelial cardiovascular risk factors that were measured in the study.

- **Dermatology:**
  - **Impetigo contagiosa:**[459]
    - Design: Randomized controlled clinical trial
    - Patients: One hundred and four patients with impetigo contagiosa, 1 months – 40 years, median – 4 years old, 47 females and 57 males. Experimental – 64 patients, control – 40 patients. Thirty-five patients were swabbed: S. aureus or S.aureus and Strep. pyogenes were isolated.
    - Therapy: Tea liquor (lotion) and ointment – experimental. Controls – framycetin and gramicidin, or oral cephalexin.
    - Results: Tea ointment was very effective with a cure rate of 81.3%. Framycetin and gramicidin group – cure rate 72.2%, cephalexin group – cure rate 78.6%.
- **Dentistry:**
  - **Dental plaque:**[460]
    - Design: Randomized placebo-controlled clinical trial.
    - Patients: 150 healthy volunteers
    - Therapy: Chinese green tea's polyphenol tablet TID x 3 weeks or x 6 weeks.
    - Results: Polyphenol tablet had evident anti-plaque effect. After 2 weeks of treatment the plaque index of experiment groups was lower than in placebo group, and was kept lower for 3 weeks after stopping the use of the tablet.
  - **Gingival inflammation:**[461]
    - Design: Randomized double-blind placebo-controlled clinical trial.
    - Patients: Forty-seven patients with inflammation of gingival, mean age 25.76 years.
    - Therapy: Chew 8 candies containing green tea extracts qd.
    - Results: There was a distinct improvement in both approximal plaque index and sulcus bleeding index values in the experiment group; slight worsening of the values were determined for the placebo group. The results indicate that the oral application of green tea catechins and polyphenols might have a positive influence on the inflammatory reaction of periodontal structures.
- **Psychology:**
  - **Cognitive, psychomotor performance, sleep.**[462]
    - Design: Randomized five-way crossover controlled clinical trial.
    - Patients: Thirty healthy volunteers
    - Therapy: 1-2 cups of tea (37.5 mg or 75 mg caffeine), or coffee (75 mg or 150 mg caffeine) or water QID. (9am, 1pm, 5 pm, 11 pm)

- Results: Ingestion of caffeinated beverages may maintain aspects of cognitive and psychomotor performance throughout the day and evening when they are administered repeatedly. Day-long tea consumption produces similar alerting effects to coffee, despite lower caffeine levels, but is less likely to disrupt sleep.

- **Oncology:**
  - **Solid tumors:**[463]
    - Design: Phase I clinical trial.
    - Patients: cohorts of three or more adult cancer patients. A total of 49 patients were studied. Patient characteristics: median age, 57 years; 23 patients were women; 98% had a Zubrod PS of 1%; 98% had PS of 1; and 21 had non-small-cell lung, 19 had head &neck cancer, three had mesothelioma, and six had other.
    - Therapy: Oral green tea extract (GTE) qd or TID x 4 weeks. Dose levels of 0.5 to 5.05 g/m(2) qd and 1.0 to 2.2 g/m(2) tid were explored.
    - Results: The maximum-tolerated dose was 4.2 g/m(2) QD or 1.0 g/m(2) TID. No major responses occurred; 10 patients with stable disease completed 6 months of GTE. A dose of 1.0 g/m(2) tid (equivalent to 7 to 8 Japanese cups [120 mL] of green tea three times daily) is recommended for future studies.
  - **Oral leukoplakia:**[464]
    - Design: Randomized, double-blind, placebo-controlled trial.
    - Patients: Thirty six patients with oral leukoplakia induced by smoking.
    - Therapy: Mixed tea, 3 g qd po and 0.1% concentration smeared on mucosa lesion TID x 3 mo amd x 6 months.
    - Results: Micronuclei formation in exfoliated oral buccal mucosa cells decreased, which indicates that mixed tea may reduce the oral cancer risk by preventing DNA damage damage in oral leukopiakias induced by cigarette smoking.
  - **UV radiation injury:**[465]
    - Design: Clinical trial
    - Patients: Normal volunteers exposed to 2 minimal erythema dose solar simulated radiation 30 min post therapy
    - Therapy: Extract of green tea or one of its constituents topically
    - Results: Application of green tea extracts resulted in a dose-dependent inhibition of the erythema response evoked by UV radiation. The (-)-epigallocatechin-3-gallate (EGCG) and (-)-epicatechin-3-gallate (ECG) polyphenolic fractions were most efficient at inhibiting erythema, whereas (-)-epigallocatechin (EGC) and (-)-epicatechin (EC) had little effect. On histologic examination, skin treated with green tea extracts reduced the number of sunburn cells and protected epidermal Langerhans cells from UV damage. Green tea extracts also reduced the DNA damage that formed after UV radiation.

Pharmacy:

Infusion: 1 heaping tsp. (1 tsp. = 2.5 g)/cup; steep 2 – 10 min.; 1 cup QD – TID. Alternatively, if green tea is steeped for more than 2 minutes, there is an increase in tannins which precipitate the caffeine and thus the stimulatory effects from the tea is decreased. Stimulation from green tea is more likely to occur with an infusion time of under 2 minutes since caffeine is very water-soluble and will be extracted before the majority of the tannins.

Green tea standardized extract: 300-400 mg polyphenols/day; standardized to 80% polyphenol and 55% epigallocatechin gallate.

Contraindications: Brinker contraindicates the use of Camellia in[466]

- speculative: kidney disorders, duodenal disorders, heart disorders, psychological disorders, prolonged use (black tea), pregnancy, nursing
- clinical studies: young children due to increased incidence of microcytic anemia, possibly due to precipitation of iron by tannins.

Toxicity: There is no reported toxicity associated with *Camellia sinensis*. However, excessive use of caffeine may cause arrhythmias, insomnia, tremors, anxiety, dyspepsia, constipation, headache, restlessness neuralgia, difficult breathing, ringing in the ears, physical and mental exhaustion, and other deleterious effects and thus individuals sensitive to the effects of caffeine may not tolerate *Camellia sinensis*.

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Capsella bursa-pastoris

Cruciferae

Common name: Shepherd's Purse

Habitat: common plant growing all over the world except the tropics

Botanical description: The plant is green, but somewhat rough with hairs. The leaves are 2-6 inches long, variable in form from lanceolate to pinnately lobed, sometimes toothed, sometimes hairy. When not in flower, its radiating leaves close to the earth distinguish the plant. A slender stem bears numerous white, 2-3 mm, inconspicuous flowers. The pod is an inverted, notched triangle containing the small seed. The odor is peculiar and somewhat unpleasant.

Parts Used: aerial parts with the fresh herb being more active than dried[467]

Constituents: Flavonoids, polypeptides, fumaric and bursic acids, choline, acetylcholine, histamine, tyramine bases, oxalates, vitamin K, vitamin C, β-carotene, potassium, calcium

Pharmacology: Studies of the constituents of Capsella are inconclusive as to which constituents are responsible for the actions of the plant. The polypeptides are thought to be responsible for the uterine contractile actions (similar to the contractions produced by oxytocin). The flavonoids are thought to contribute to the anti-inflammatory and anti-ulcer actions of the plant. Administration of Capsella produces a transient decrease in blood pressure, which could be due to the acetylcholine. The hemostatic action is believed to be due to the high content of oxalic and dicarboxylic acids.[468]

Medicinal actions: Anti-hemorrhagic, urinary antiseptic, antipyretic, uterine stimulant/ emmenagogue, diuretic

Medicinal use:

Due to the antihemorrhagic effect, Capsella can allay internal bleeding in any site, but has most efficacy in staunching bleeding from ulcerated tissues (lung, stomach, kidneys, etc.). Its styptic actions are noted on external application in the treatment of wounds, hemorrhoids, and epistaxis.

- Gynecologic Conditions: Capsella is used for the most part as a styptic in the reproductive tract. Capsella is most indicated in cases of uterine hemorrhage. Capsella is also used to reduce menorrhagia (specifically with colorless flow), perhaps by stimulating uterine contractions and therefore uterine tone while exerting a styptic effect. Pale colored blood is an sign of anemia, which is a minor indication for Capsella due to the nourishment that it provides.
- Genitourinary Conditions: Capsella is also a soothing, mildly stimulating diuretic, most indicated in cases of hematuria and urinary sediment.

According to Mills and Bone:[469]

- Gynecologic Conditions: Capsella is a uterine antihemorrhagic and is utilized in the treatment of uterine myomas, one of the most common causes of menorrhagia. Capsella has also been indicated for bleeding from threatened miscarriage.

According to the Textbook of Natural Medicine :[470]

- Gynecologic Conditions: Intravenous and intramuscular injections have been found effective in menorrhagia due to function abnormalities and fibroids.

According to Weiss:[471]

- Gynecologic Conditions: Although Capsella has hemostatic properties, the actions are inconsistent. There is likelihood that the active principles are soon destroyed in the gastrointestinal tract although this action is not fully investigated. Apparently the hemostatic principles are formed after storage through the conversion of other principles and are lost again as further conversion occurs with extended storage. Capsella is far from satisfactory in obstetrics and is most indicated for chronic uterine bleeding such as essential uterine hemorrhage and hemorrhage due to myoma.

According to King's:[472]

- Genitourinary Conditions: In *urinary derangements of renal or cystic origin and in hematuria*, an infusion, an especially a tincture of the herb will be found very efficient.
- Gynecologic Conditions: It has likewise been used with some success for the promotion of the catamenial flow in cases of *simple amenorrhea*. It is a remedy for *chronic menorrhagia*, with too frequent and too long-continued or constant, but almost colorless flow. Associated with this condition are a frequent urging to urinate, and a deposit of phosphates.
- Gastrointestinal Conditions: *Atonic dyspepsia and chronic diarrhea* have been successfully treated with it. In *bleeding piles, diarrhea and dysentery* it is stated to have been found beneficial.
- Pulmonary Conditions: It has been used with some success as an expectorant.

Pharmacy: Infusion:

3-5 gm/day; (for heavy bleeding: 5g/cup TID) [1 tsp. = 1.5g] (Dr. Alschuler)

1-2 tsp./ glass, boiled briefly, sig 2-4 cups qd (Weiss)

Specific Tincture: 1-2 drams (1/8 to ¼ oz.) or 1-30 drops q 2-3 hours (King's)

Extract:

1:3 25% ETOH; sig 2-10 ml TID (10 ml TID for heavy bleeding) (Dr. Alschuler)

½ tsp. every ½ hour for 4-6 doses for heavy bleeding (Dipasquale)

1:1, sig 5 ml bid to tid (Weiss)

20-60 minims

Poultice, Compress for external bleeding (Alschuler) or ecchymosis and rheumatic pains (King's)

Uterine myoma formula:[473] 1:2 fluid extracts sig 5 ml tid

Capsella bursa-pastoris (20), Achillea millefolium (25), Thuja occidentalis (20), Echinacea angustifolia (20) Panax notoginseng (15)

Contraindications: Brinker suggests contraindication with pregnancy due to its emmenagogue and abortifacient effects (empirical) and its uterine stimulant action as demonstrated in vitro and in animal studies.[474]

Considering that Capsella contains oxalate salts, its use should be taken into consideration if the patient has a history of oxalate kidney stones.[475]

The vitamin K content should be considered if large quantities are used for a week or more in patients concurrently taking anticoagulant medications.[476]

Toxicity: Weiss considers Capsella perfectly safe.

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[475] Brinker p. 151

[476] Brinker p. 167

Capsicum annuum L. var. frutescens

Solanaceae

Common name: cayenne, red pepper

Habitat: Originated in tropical Americas then introduced into India and Africa.

Botanical Description: A shrubby perennial plant 2-6 feet high with angular purplish branches. Calyx five-cleft, erect; corolla white. The leaves are long stalked, ovate or oblong, nearly entire, occasionally in pairs. The fruit is typically red and can reach up to 10 cm. in length. The fruit is oblong-conical in shape. The pericarp is glabrous, shriveled and orange-red. Each fruit contains 10-20 seeds which are flattened and 3-4 mm long.

Parts used: Fruit

Constituents: [477]

- Capsaicin (0.1-1.5%) compounds which is a mixture of: capsaicin, dihydrocapsaicin, nordihydrocapsaicin, homodihydrocapsaicin.
- Carotenoids: capsanthin, capsorubin, carotene
- Ascorbic acid (0.1-0.5%),
- Tocopherols
- Steroidal saponins (capsicidins) in seeds and root.

Pharmacology: Capsaicin relieves pain and itching by temporarily stimulating release of various neurotransmitters from C-fiber afferent neurons, leading to their depletion. Without the neurotransmitters, pain signals can no longer be sent. Depletion takes approximatley three to ten days to occur after administration 4 times per day for 7 days. Once analgesia occurs, application should continue for three times per day. Other substances that deplete substance P are found in Zingeber and Curcuma.

Medicinal actions: Circulatory stimulant, tonic, carminative, spasmolytic, diaphoretic, antiseptic, rubefacient, counter-irritant.

Traditional Medicinal Use:

Specific Indications and Uses**:** Marked depression and debility; atonic dyspepsia of drunkards; delirium tremens; colic, with abdominal distension; congestive chills; cold extremities, with blanched lips and small, weak pulse; congestion, with capillary atony; tongue dry and harsh, and buccal and salivary secretions scanty, in fevers; chronic hemorrhoids, from relaxation. [478]

Both King and Cook described the fruit of Capsicum as one of the purest of all known stimulants, having a long lasting action that spreads through the system rather slowly, but ultimately reaching every organ of the body.

When used in a considerable dose, it excites the stomach strongly, yet is diffused so slowly that for a time it disturbs the equilibrium of circulation and nervous action between the stomach and the adjacent parts; and hence large quantities may be followed, for a short time, by hiccough, and even by a cramping pain in the stomach.

This botanical was considered indicated for all forms of depression and atony, especially where these are dependent upon feebleness of either generalor local circulation, or loss of nerve power not connected with local irritability and acts also upon the nervous structures. The secernents all feel the beneficial effects of the article. Capsium was also used for the purpose of arousing tissues so that they will respond to the impressions of other remedies. It relieves the extreme restlessness which usually accompanies depressed, atonic conditions on which account it was combined associated with Lobelia and Cypripedium to secure an antispasmodic action. Capsicum is also appropriate in the the young and old, but is particularly useful in old people when the body-heat is low, vitality depressed, and reaction sluggish.

- Behavioral/Psychological Conditions: According to King, in the *atonic dyspepsia of dipsomania (alcoholism)* it takes the place of alcoholic stimulants, removing the craving for alcoholics and sense of sinking at the pit of the stomach, prevents the morning sickness and vomiting, restores gastric tone and promotes the digestion of wholesome food. It should be administered whenever the desire for drink comes on.
- Cardiovascular Conditions: Capsicum was believed to act mainly upon the circulation, first effecting the heart and the large and central blood vessels; and subsequently traverses from the center to the capillaries. This action was thought to slowly increase circulatory tone, though not so materially as to increase the frequency of the pulse, but giving power to the pulse. In cases where the pulse is enfeebled or a creeping, wiry, unsteady and very small pulse; and very much hurried from putrescent tendencies (conditions of morbid accumulations such as suppuration), Capsicum was used resulting in diminished frequency but greater firmness of the arterial action.

  According to Cook, this agent was also one of the most powerful arrestors of gangrene by virtue of its antiseptic qualities and its great influence in sustaining the circulatory function.
- Gastrointestinal Conditions: Capsicum was used to directly arouse the stomach, being indicated in cases of indigestion

connected with torpor, sluggishness, and loss of sensibility where it was generally combined with relaxing tonics. In atonic dyspepsia and catarrhal gastritis it stimulates the nerves of the stomach, promotes the secretion of the digestive juices, and assists peristaltic motion.

Combined in small quantities with cathartics, Capsicum was used to increase their intensity and prevent griping. Its own steady stimulation of the bowels was relied on without cathartics as an aperient, particularly in persons suffering from a semi-paralyzed condition of the gastrointestinal tract.

Capsicum is said to reduce irritation and increase capillary activity in the rectum and may be a remedy for diarrhea, constipation, piles, and in dysentery, where the stools are bloody, the mucus tenacious, with tenesmus and burning. These cases are those in which there is a lax habit of body with feeble digestion.

- Genitourinary Conditions: Capsicum is said to reduce irritation and increase capillary activity in chronic renal congestion as the Eclectics used it to affect the tenesmic action of the bladder in the presence of a lax habit of body with feeble digestion.
- Gynecologic Conditions: Capsicum has been used in passive hemorrhages, especially uterine, and, when combined with the compound powder of Ipecacuanha (an Eclectic preparation – see King's) will, in many instances, promptly arrest hemorrhage after parturition.
- Inflammatory Conditions: The Eclectics utilized Capsicum in congestive intermittent fevers, reducing the needed dose of quinine. to quinine. It was also used in low fevers, where there is dryness and constriction of the tissues, and the tongue is dry and harsh and there is but little buccal or salivary secretion.
- Metabolic Conditions: Alterative preparations of Capsicum were designed for secondary syphilis, mercurial poisoning, etc., where the tone of the system was considered impaired.
- Neurological Conditions: In delirium tremens, it was considered the best of all stimulants by both the Eclectics and Physiomedicalists, in combination with nervines.
- Pulmonary Conditions: Capsicum was applied n degenerate coughs, with a too abundant and tenacious expectoration.
- Topical Applications: As an outward application, Capsicum was considered one of the best bases of all stimulating liniments arousing circulation. It also made a external remedy for all internal inflammations and congestions, having been used freely as deep congestions require enormous quantities of it before it is felt.

Cook called it one of the best agents, both internally and externally, in paralysis as a wash or used as a plaster in deep paralysis and overwhelming spinal congestion, to the entire length of the spine. He also included its use in conditions where there is an "overwhelming determination of blood to the brain" (inflammatory processes involving the CNS such as meningitis), and the extremities become almost icy cold. For such cases he applied Capsicum to the feet in the base of a paste.

In suppurating difficulties about the throat, its liberal outward application was the Physiomedical treatment.

Locally, Capsicum was an indispensable agent in malignant and indolent ulcers and carbuncles; in all sloughing sores and on all forms of gangrene.

Current Medicinal Use: The fruit of *Capsicum frutescens* is one of the purest of all known stimulants. It acts with force and has a long-lasting, spreading effect. It acts mainly on the circulation and nerves to give increased tone to circulation manifested as increased force of the pulse. Red pepper relieves flatulence, increases appetite, and promotes urination. It is a stimulant in phlegmatic disorders, paralysis, and stomach atony. *Capsicum frutescens* will stimulate the function of most internal organs, especially when they are in a congested, weakened state such as congested lungs, renal insufficiency, uterine atony, and feeble pulse. In summary, *Capsicum frutescens* should be reserved for use when significant stimulation is required.

Capsicum frutescens has been evaluated for the relief of pain associated with a great number of diseases. These include: post-mastectomy syndrome, urticaria, psoriasis, diabetic neuropathy, arthritis, osteoarthritis, pruritis, post-surgical neuromas, and others.

- Cardiovascular Conditions: The vasodilating property of *Capsicum frutescens* lends it systemic application. Cayenne acts upon the temperature regulatory center to increase body temperature. It also causes rubifaceant and diaphoretic effects.

Cayenne, used by itself, can effectively restore proper circulation in the extremities. *Capsicum frutescens* and *Ginkgo biloba* combine well together in the treatment of Raynaud's syndrome. It also sustains portal circulation.

Capsicum ingestion appears to induce an increase in fibrinolytic activity and hypocoaguability of the blood. This has been demonstrated in Thai people who eat hot peppers daily.

- Dermatologic Conditions: The hot principal in cayenne peppers, known as capsaicin, is used for many painful conditions, including shingles and postherpetic neuralgia. In a double-blind trial, a cream containing 0.075% capsaicin, applied three to four times per day to the painful area, greatly reduced pain. In another study, a lower concentration of capsaicin (0.025%) was also effective. Two or more weeks of treatment may be required to get the full benefit of the cream. [479, 480]

In psoriasis and pruritic conditions Capsaicin desensitizes C-fibers which reduced pain and itching. [481, 482]

- Gastrointestinal Conditions: *Capsicum frutescens* is used to relieve flatulence and intestinal colic. It will stimulate a weakened

stomach, increases gastric acid secretion [483], and increases the intensity of cathartics while preventing the gripping that is often associated with their use. Additionally, it is a circulatory stimulant thus increasing blood supply to the digestive organs hence enhancing their activities (secretions and regular contractions). Cayenne also has a counter-irritant effect which causes vasodilation (and heat) in the tissues with which it comes into contact. This means that while it enhances local blood flow in the gastrointestinal mucosa, it is also irritating, especially to ulcerated tissue. *Capsicum frutescens* is therefore indicated in gastric and digestive atony and insufficiency, but relatively contraindicated in ulcerations and inflammations of the digestive tract.

Two studies were conducted to investigate the effects of red pepper (capsaicin) on feeding behaviour and energy intake. In the first study, the effects of dietary red pepper added to high-fat and high-carbohydrate meals on subsequent energy and macronutrient intakes were examined in thirteen Japanese female subjects. The results indicate that the ingestion of red pepper decreases appetite and subsequent protein and fat intakes in Japanese females and energy intake in Caucasian males. Moreover, this effect might be related to an increase in sympathetic nervous system activity in Caucasian males.[484]

- Genitourinary Conditions: Current pharmacologic treatment of the overactive bladder relies on anticholinergic drugs. However, these drugs often have troublesome side effects and frequently are given in doses insufficient to restore continence in patients with detrusor instability. One study presented the background and clinical research dealing with intravesical instillation of capsaicin and resinfferatoxin as treatments for the overactive bladder as capsaicin desensitizes C-fiber afferent neurons, which may be responsible for the signals that trigger detrusor over activity. Studies with capsaicin over the past 8 years have demonstrated clinical efficacy with minimal long-term complications. Most of these studies have also shown that the acute pain and irritation associated with capsaicin are a major deterrent to widespread use. [485]
- Metabolic Conditions: The effects of dietary hot red pepper on energy metabolism at rest and during exercise were examined in long distance male runners 18-23 yr of age. A standardized meal was given on the evening prior to the experiment. The subjects had a meal (2720 kJ) with or without 10 g of hot red pepper for breakfast. During rest (2.5 h after meal) and exercise (pedaling for 1 h at 150 W, about 60% VO_2 max, using cycling ergometry), expired gasses and venous blood were collected. The meal with hot red pepper significantly elevated respiratory quotient and blood lactate levels at rest and during exercise. Oxygen consumption at rest was slightly but not significantly higher in the hot red pepper meal at 30 min after the meal. Plasma epinephrine and norepinephrine levels were significantly higher in those who had only hot red pepper at 30 min after the meal. These results suggest that hot red pepper ingestion stimulates carbohydrate oxidation at rest and during exercise.[486]
- Pain Conditions: Capsaicin administered via the nose can also be a useful therapy for cluster headaches. This is supported by double-blind studies. Weaker scientific support exists for the use of capsaicin for migraines. [487]
- Topical Applications: Topically, Capsicum frutescens increases circulation and will cause hyperemia and blistering. Topical applications of Capsicum frutescens will relieve inflammation of the organs underneath whereas its internal use is contraindicated in inflammatory disorders. Applied topically it will soften hardened skin, dissolve discolorations, heal bites and stings, and gargled will relieve toothache.

Capsicum frutescens exerts an analgesic effect systemically if taken internally or in the area of topical application. The depletion of substance P from sensory afferent nerves creates a temporary analgesic effect. Thus, Capsicum frutescens is used to relieve pain associated with Herpes zoster, arthralgias, and even headaches.

Several double-blind trials have shown that topical use of cayenne extract creams containing 0.025–0.075% capsaicin reduces pain and tenderness caused by osteoarthritis. These creams are typically applied QID for two to four weeks, after which BID application may be sufficient. Products containing capsicum oleoresin rather than purified capsaicin may not be as effective.[488, 489, 490]

Pharmacy: All internal forms of capsicum are best tolerated if taken with food. Capsicum may be used wherever a pure stimulant is indicated, in all cases of diminished vital action, and may be combined beneficially with other remedies, in order to promote their action, as emetics, cathartics, diaphoretics, tonics, etc. Due to its stimulating nature it tends to enhance the tonifying and stimulatory effects of the other herbs in the formula.

Powder
Capsules: 30-120 mg three times daily (Alschuler)
Infusion: ½ to 1 tsp. powder per cup of water, steep10 minutes; mix 1 T this infusion with hot water and drink prn(Alschuler)
Tincture:

1:3 Tincture: sig 0.2 ml three times daily; maximum weekly dose is 3 ml (Alschuler)
1:20 tincture: sig 1 ml three times daily; maximum weekly dosage tincture is 20 ml (Alschuler)

Ointment and cream—apply topically qid, pain will be initially increased then subsides. At this point, usally 3-4 days, application can be decreased to BID. Analgesics can be used during the acute period of exacerbation.

Contraindications: Contraindications to internal use include persons with acute gastrointestinal inflammation or ulceration.

According to Cook, its use was also contraindicated in the presence of a full and hard pulse or in hot and burning skin with a large pulse.

Brinker suggests caution with the use of Capsicum in acute asthma or inhalation due to bronchoconstriction with initial systemic exposure. He contraindicates its application over damaged or hypersensitive skin.[491]

Potential drug interactions include enhancement of theophylline absorption, increased sleeping time and plasma concentration of hexobarbital with acute use (which decreased with chronic use), reduced gastric mucosal damage when taken an hour before aspirin, potentiation of coughing due to ACE inhibitors with topical application, potentiation of platelet aggregation inhibitors. In general, acrid herbs increase intestinal absorption of medicines and other botanicals.[492]

Toxicity:

Adverse reactions to topical application include: burning, stinging, erythema, heat, pain, and with prolonged use may cause permanent loss of sensory nerve function in the area of application. Symptoms of internal toxicity include: heartburn, anal burning, gastric erosions. External adverse effects may occur if Capsicum extracts highly concentrated in capsaicin are applied for a prolonged period of time. (Alschuler)

Internal toxicity may occur if Capsicum is ingested in quantities greater than the therapeutic doses away from food. King notes that a drachm of red pepper may be swallowed with evident pleasure and without ill results. However, larger doses may produce vomiting, purging, pains in the stomach and bowels, heat and inflammation of the stomach, giddiness, a species of intoxication, and an enfeebled condition of the nervous power.[493]

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Caryophyllus aromaticus (Eugenia carophyllus) **Myrtaceae**

Common name: Clove

Habitat: East Indies

Botanical description: Evergreen tree that grows from 12 to 25 feet. Flowers occur in corymbs; calyx is green and becomes dull purple. The unexpanded flower-bud is the medicinal part and appears commerically as a dark-red, cylindrical body, 1-2 cm long with 4 short thick teeth at the summit enclosing the small globular bud.

Parts used: bud

Constituents: volatile oil (up to 20% consisting of eugenol, eugenin, caryphyllin)

Pharmacology:

Medicinal actions: Stimulant, carminative, aromatic

Traditional Medicinal Uses:

According to King:

Carryophyllus is an aromatic, stimulant, and irritant.

- Gastrointestinal Conditions: Used to allay *vomiting* and *sickness at stomach*, to stimulate the digestive functions, and to improve the flavor or operation of other remedies, and prevent a tendency to their producing sickness or griping.

Current Medicinal Uses:

- Gastrointestinal Conditions: Caryophyllus buds are a spicy, warming carminative. Their ingestion will warm the gastrointestinal tract, stimulate digestive secretions and peristalsis via an irritant effect. Caryophyllus is most useful as a carminative that is associated with nausea and vomiting and abdominal distention.
- Topical Applications: Topical application of clove oil causes irritation to the skin followed by partial anaesthesia. This application is particularly useful for the pain associated with toothaches.
- Insect repellant: The repellency of different concentrations (5, 10, 25, 50, 75, and 100%) and combinations of 5 essential oils (Bourbon geranium, cedarwood, clove, peppermint, and thyme) to mosquitoes when applied to human skin was determined. Thyme and clove oils were the most effective mosquito repellents and provided 1 1/2 to 3 1/2 h of protection, depending on oil concentration. Clove oil (50%) combined with geranium oil (50%) or with thyme oil (50%) prevented biting for 1 1/4 to 2 1/2 h. The potential for using essential oils as topical mosquito repellents may be limited by user acceptability; clove, thyme, and peppermint oils can be irritating to the skin, whereas both human subjects in this study judged the odor of clove and thyme oils unacceptable at concentrations > or = 25%[494]
- Blood thinner: Two anti-platelet components, eugenol and acetyl eugenol. They inhibited arachidonate-, adrenaline- and collagen-induced platelet aggregation; they were more potent in inhibiting aggregation by the first two agonists. Their inhibitory effect was reversible. These components were antiaggregatory by a combination of at least two effects: (i) inhibition of platelet thromboxane formation, and (ii) increased formation of 12-lipoxygenase products (12-HPETE).[495]
- Oral antimicrobial: The antimicrobial action of natural substances was investigated in vitro against oral bacteria including Streptococcus sp., Actinomyces sp., Actinobacillus sp., Bacteroides sp., Capnocytophaga sp., Eikenella sp., Fusobacterium sp. and Propionibacterium sp. Among the natural substances tested, hinokitiol was the most inhibitory to oral bacteria. Cinnamon bark oil, papua-mace extracts, and clove bud oil in spice extracts were also inhibitory against many oral bacteria.[496]

Pharmacy:

- Infusion: ½-1tsp/cup; 1 cup TID.[497]
- Tincture: 1:5 tincture; 2.5 ml TID.[498]
- Oil: ≤ 0.1 ml/day.[499]
- Topical: for toothache put clove or oil on cotton wool near the tooth and keep in the mouth.[500]

Toxicity/Side Effects:

- The potential of eugenol and of clove leaf oil, which contains a high concentration of eugenol, to induce delayed skin hypersensitivity or to elicit reactions due to pre-existing skin sensitization in man was evaluated by analysing patch-test data. The survey indicates that, at the concentrations present in consumer products, eugenol alone or as part of clove leaf oil has a very low potential either to elicit pre-existing sensitization ('elicited' reactions) or to induce hypersensitivity ('induced' reactions).[501]

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Cassia spp.

Leguminosae

C. acutifolia, C. obovata, C. angustifolia, C. lanceolata
Common name: Senna

Habitat: Africa, Egypt, India

Botanical description: Senna is a 2 foot high shrub with greyish to yellowish green leaves that are lanceolate about 1-5 cm long and 0.5 cm wide. The pods are kidney shaped, flat with the imprint of the seed showing through the pod.

Parts used: Leaves, pod

Constituents: Anthraquinone glycosides (sennosides and their aglycones), naphthalene glycosides, misc. mucilage, flavonoids, volatile oil, sugars, resins

Pharmacology: The anthraquinones are absorbed into the blood, re-secreted into the colon as active anthraquinones where they stimulate smooth muscle contraction. Interestingly, as the anthraquinones circulate in the blood, the heart rate decreases. However, once they are secreted into the bowel evacuation occurs, the pulse rate increases.

Medicinal actions: Stimulant laxative, cathartic

Traditional Medicinal Use:

- Gastrointestinal Conditions: King stated the specific indications as wind or bilious colic and as a laxative for non-inflammatory conditions of the intestinal tract. It is very useful when a laxative is indicated in febrile diseases, particularly in the early stage bilious fevers.[502] Cassia is especially effective in children and will affect nursing children by being given to the mother. It is to be used where a severe impression on the bowels is not desired. Ellingwood described its use only for temporary constipation such as that after surgery, in convalescence and in infants in children.[503]

Its influence is chiefly on the small intestines, augmenting secretions and peristalsis and producing loose, yellowish-brown evacuations according to Cook. Yet, Ellingwood stated that it produces normal evacuations of the bowels with little griping if used carefully. It does not act as a sedative or refrigerant, as does some other cathartics. Cook described Cassia as a relaxing and stimulating cathartic, indicated when fast action is needed and when the abdominal and pelvic viscera are sluggish.[504] It first creates nausea and relaxation of the pulse; subsequently there are griping, flatulence, moderate excitement of the pulse, and excitement of the abdominal and pelvic vessels. It leaves no tonic impression. It is very efficient, but not drastic nor unsafe.

Current Medicinal use:

- Gastrointestinal Conditions: Senna is useful in atonic constipation, or until the cause of constipation is discovered.

Current Research Review:

- **Gastroenterology:**
  - **Gastrointestinal tract dysfunction:**[505]
    - Design: Randomized controlled clinical trial
    - Patients: 130 patients with gastrointestinal tract dysfunction after abdominal operation
    - Therapy: Enema administration (Clyster method) of Cassia angustifolia extract (CAE).
    - Resutls: CAE was very effective in reducing the rate of gastrointestinal decompression, accelerating the restitution of borborygmi and the time exhaustion.
  - **Constipation:**[506]
    - Design: Multicenter randomized controlled clinical trial
    - Patients: 80 adult patients admitted to 5 community hospitals and one provincial hospital with at least 72 hours of constipation.
    - Therapy: 120 ml Cassia alata Linn. infusion hs. 120 ml mist. alba infusion hs for another group, and 120 ml infusion hs for placebo group.
    - Results: Eighty three percent of patients in Cassia alata Linn. group passed stool within 24 hours, compared to 18% of patients in placebo group (and 86% of patients in mist.alba group). Minimal side effects (nausea, dyspepsia, abdominal pain and diarrhea) were noted in 16-25% of the patients.

Pharmacy:

The purgative effect of Senna is increased by the addition of bitters.[507, 508] To avoid griping, Cassia should be combined with carminatives. The resin (highest in the leaves) can be irritating to the upper G.I. causing nausea. If the pods are soaked in cold water, these resins are not extracted. This cold infusion does have less of a laxative action as well. A hot Senna tea is, therefore, a stronger laxative.

Infusion: 4-12 dried pods steeped in cold or hot water for 6-12 hours; Sig-1 cup hs.
Tincture 1:5 45% EtOH; sig- 2-4 ml hs

Contraindications:
Senna is contraindicated in irritation, congestive or inflammatory conditions of the abdominal viscera, general debility, hemorrhoids, prolapsed anus, and in irritation of the womb and menorrhagia.

Toxicity: Catharsis and gripping

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[508] Cook

Caulophyllum thalictroides

Berberidaceae

Common name: Blue Cohosh

Habitat: Native to moist rich woods of eastern N. America.

Botanical description: A perennial plant with a smooth, round, purplish stems growing to a height of 1-3 ft. The leaves are biternate or tirternate, leaflets are oval, petiolate, with a pale underside, about 2-3 in. long. The small flowers are in racemes, yellow-green to green-purple in spring. In late summer there are round bluish-black fruits.

Part Used: Root

Constituents: alkaloid (methycytistine, anagyrine, bapitfoline, magnoflorine), saponin glycosides (caulosaponin, caulophyllosaponin)

Medicinal actions: Anti-inflammatory, antispasmodic, diuretic, vermifuge, uterine tonic, emmenagogue.

Medicinal use:

Gynecologic Conditions: Caulophyllum is primarily anti-spasmodic and tonic to the uterus. It increases blood supply to the uterus via vasodilatation. Caulophyllum is most indicated in conditions of uterine weakness and loss of tone due to chronic inflammation (i.e.. cervicitis, chronic PID, endometriosis, dysmenorrhea, amenorrhea, ovarian pain and/or inflammation, dysmenorrhea, and irregular menses). Caulophyllum exerts an anti-spasmodic action in cases of dysmenorrhea. It is specifically indicated when the uterine spasms are worse the first day of the menstrual flow.

Caulophyllum is most indicated when there is pelvic organ weakness, sluggishness, and a sense of fullness. Some instances of amenorrhea can be due to atonicity and congestion in the pelvis. Caulophyllum is very appropriate in these cases to provide tone and bring on menses, often without producing menstrual cramping (d/t the anti-spasmodic action and the increased nutrition of the tissues). Caulophyllum is most indicated as a pelvic tonic in cases where there is pelvic pain, a sense of pelvic fullness, weak pelvic tissues (indicated by scanty menses, poor vaginal tone, weak orgasmic contractions), and uterine irritability (irregular menses, dysmenorrhea). Caulophyllum is useful in the treatment of weak kidneys, prostate weakness (BPH), and uterine weakness. Caulophyllum combines well with Mitchella repens.

Caulophyllum has similar actions to Cimicifuga racemosa (black cohosh) and used together, they facilitate labor by normalizing uterine contractions and relaxing the cervical os. Each of these herbs is useful in false labor. Muscle contractions are strengthened (positive inotropic effect) and slowed down (negative chronotropic effect). Caulophyllum is used as a partus preparator because of its ability to tonify the uterus, especially in cases of delayed labor secondary to uterine debility and atonicity. It is often used during the last four weeks of pregnancy as a partus preparator in the form of Mother's Cordial: [Caulophyllum(1) :Mitchella(4): Chamaelirium luteum(1): Viburnum spp.(1)]. Similarly, the anti-spasmodic action of Caulophyllum makes this plant useful in cases of threatened miscarriage. For threatened miscarriage, it is safe to use Caulophyllum at any time in pregnancy.

According to Mills and Bone:[509]

- Musculoskeletal Conditions: Caulophyllum is among the class of herbs which contain stimasterol as well as other potentially anti-inflammatory phytosterols and have a reputation for application in inflammatory diseases.
- Gynecologic Conditions: Caulophyllum can be utilized to support hormonal balance by correcting hypothalamic function: in functional secondary amenorrhea, difficulty with conception and endometriosis it can be combined with Vitex.

According to Scudder:[510]

- Gynecologic Conditions: Caulophyllum exerts a very decided influence upon the parturient uterus, stimulating normal contraction, both before and after delivery. In this case, its first use is to relieve false labor pains; its second, to effect co-ordination of the muscular contractions. and third, to increase the power of contractions. The first and second effects are the most marked, yet the third is quite apparent as well.

Scudder believes Caulophyllum exerts its influence through the hypogastric plexus ; though to some extent it influences every process controlled by the sympathetic nervous system. Acting in this way it influences the circulation, nutrition, and functions of the reproductive organs. It has been employed in chronic uterine diseases with some success as well.

- Nervous Conditions: It may be used with good effect in some cases of nervous disease; especially in that condition known as asthenic plethora.
- Musculoskeletal Conditions: As a remedy for rheumatism it is inferior to Macrotys, but in some cases it exerts a better influence.

According to Cook:

Caulophyllum is moderately diffusive, stimulating and relaxing in about equal degrees spending its main powers upon the nervous system. These qualities make it one of the very best of antispasmodics the relieve nervous feebleness with irritability as in cramping of the bowels twitching of the muscles in typhoid and parturient states, hysteria, painful menstruation, colic, etc.

- Genitourinary Conditions: It promotes diuresis by sustaining the pelvic nerves. It is useful in weak kidneys, albuminous urine and chronic difficulties of the prostate.

- Gynecologic Conditions: It is of special service in strengthening and relieving painful functional difficulties of the female generative organs; it can not be properly classed as an emmenagogue. It has a reputation in neuralgic forms of rheumatism, especially that form which passes with some as chronic inflammation of the womb. By sustaining the pelvic nerves it strengthens the uterus in leukorrhea and insufficient menstruation.

It is useful in nervous restlessness during pregnancy and before parturition to give tone and comfort to the uterus. It is one of the most valuable of all parturients when the uterine action is becoming weary in which case it may be combined with the Composition Powder (a Thompsonian formula) and a very little Capsicum or Bayberry added when depression is considerable.

- Nervous Conditions: It sustains the nervous system, but at the same time soothes it.
- Pulmonary Conditions: Its antispasmodic virtues may be used to much advantage in asthma, especially in combination with diaphoretic relaxants.

According to King:

Specific Indications and Uses.—The specific indications for Caulophyllum are uterine pain, with fullness, weight, and pain in the legs; fullness of tissues as if congested; debility (irritability) of the nervous system, with impaired muscular power; spasmodic muscular pains; articular pain; rheumatic pains of asthenic plethora; epigastric and umbilical colicky pains; dull frontal headache; great thirst; as an oxytocic; to relieve false pains and uterine irritability; sexual debility, with excitability; spasmodic uterine contractions; dysmenorrhoea; irregular menstruation; crampy pains in stomach and bowels after eating; pain in toes and fingers not due to tissue changes.

Of Caulophyllum, Rafinesque states that "as a powerful emmenagogue it promotes delivery, menstruation, and dropsical discharges," and that "it was employed by the Indians and their imitators for rheumatism, dropsy, colic, sore throat, cramp, hiccough, epilepsy, hysterics, inflammation of the uterus, etc." Blue cohosh is reputed antispasmodic, emmenagogue, and parturifacient, besides being diuretic, diaphoretic, and expectorant. As an antispasmodic it has been employed in chorea and epilepsy due to diseased states of the sexual organs, but with varying results. It is better suited for spasmodic intestinal affections, as flatulent and spasmodic colic, and cramps. It is not without value in obstinate singultus. Its antispasmodic effects are permanent.

- Gastrointestinal Conditions: Prof. King first employed blue cohosh for its beneficial influence on abnormalities of the mucous tissues, using it for aphthous stomatitis in decoction, alone or combined with Hydrastis. It is also a remedy for gastric nausea and vomiting.
- Gynecologic Conditions: Prof. Scudder believed that this agent exerted its influence through the hypogastric plexus, thus affecting the circulation, nutrition, and functions of the reproductive apparatus. As a gynecian remedy it has been employed to relieve irritation of the reproductive organs as if dependent on congestion. It controls chronic inflammatory states of these organs and gives tone in cases of debility. In the sexual disorders of the female it is indicated by tenderness and pain in the uterus, in debilitated patients. It has been very successfully used in cases of hysteria to overcome the attack, and to relieve ovarian, or mammary pain, or irritation when accompanying that disorder. Chronic corporeal, or cervical endometritis, metritis, ovaritis, ovaralgia, uterine leucorrhoea, amenorrhoea, and dysmenorrhoea, are conditions in which it has been most successfully employed. It has an established reputation as a remedy for rheumatism of the uterus, with nervous excitement, for uterine cramps attending menstruation, and for menorrhagia, depending on uterine subinvolution.

Its use as a parturient originated in the custom of the Indian women of employing a decoction of the root for 2 or 3 weeks previous to labor to facilitate child-birth. There is no doubt but that Caulophyllum has a decided action upon the gravid uterus. During labor it relieves false pains and coordinates muscular contractions, at the same time increasing their power. Like Macrotys, it is a better oxytocic than ergot. Unlike the latter agent it stimulates normal contraction instead of inducing spasmodic uterine action. It is most valuable in those cases where delay is due to debility, fatigue, or lack of uterine nervous energy, and for deficient contractions where the tissues feel full, as if congested. As a partus praeparator, blue cohosh has enjoyed a well-merited reputation. When used by delicate women, or those who experience prolonged and painful labors, for several weeks previous to confinement, it gives tone and vigor to all the parts engaged in the accouchement, facilitating its progress, and relieving much suffering. Prof. Hale testifies that women who have taken Caulophyllum previous to confinement, have overrun their time from 10 to 12 days, but all had very easy labors and made good recoveries. It is a good remedy for after-pains, especially when spasmodic in character. Caulophyllin has also been used for this purpose. It is a remedy for hour-glass contraction and for spurious labor-pains. Blue cohosh acts as an antiabortive by relieving the irritation upon which the trouble depends. King states that for this purpose it is fully equal to Viburnum.

- Genitourinary Conditions: By lessening irritation it has been serviceable in cystitis, urethritis, chronic nephritis, and albuminuria. Spasmodic retention of urine is relieved by it.
- Rheumatic Conditions: It is a good remedy for some cases of rheumatism, though not so valuable as Macrotys. It effectually overcomes rheumatoid conditions of the uterus and of the stomach—in the latter instance when crampy pains follow the ingestion of food. While valuable in all chronic cases of muscular rheumatism, it is especially adapted to articular rheumatism, particularly when confined to the smaller joints, as of the toes and fingers. It is a remedy for asthenic plethora, and for rheumatic pains accompanying that condition.
- Male Conditions: Associated with testicular support, it favorably influences orchialgia.
- Pulmonary Conditions: It has been suggested as a remedy for bronchitis and catarrhal pneumonia.
- Sleep Conditions: By its sedative action it is valuable in some cases of insomnia.

Pharmacy:

Decoction:

1 tsp./cup; sig 1 cup TID (Dr. Alschuler)

root j (1 oz.) to aqua Oj (1 pint), from 1 to 3 ounces, every 3 or 4 hours (King)

Tincture

1:5, 45%EtOH; sig 1-3 ml TID (Dr. Alschuler)

tincture of the recently dried root, viij. to Alcohol 76º Oj. The alcoholic fluid extract, representing ounce for ounce, is also a good preparation. (Scudder)

Specific Caulophyllum, from 3 to 10 drops; of caulophyllin, from 2 to 4 grains (King)

Fluid Extract 1:1 70% EtOH; sig 0.5-1 ml TID (Dr. Alschuler)

Lloyd's Leontin (the1 per cent solution of the emmenagogue principle of blue cohosh) has been very successfully employed in amenorrhoea, dysmenorrhoea, and chlorosis. The dose ranges from 5 to 15 drops in syrup or sweetened water. (King)

Contraindications: Caulophyllum should be avoided in pregnancy prior to the ninth month due to its emmenagogue and abortifacient effects (empirical) and the uterine stimulant activity of its saponin (in vitro and animal studies).[511]

Toxicity: Nausea, headache, increased blood pressure at doses 3-4 x greater than those listed above.

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[509] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 148, 242-4.

[510] Scudder J. Specific Medications and Specific Medicines.

[511] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 40

Ceanothus americanus

Rhamnaceae

Common name: Red root, New Jersey tea

Haitat:

Botanical description: Root tough, woody, dark brown, striated or finely wrinkled longitudinally. Bark thin, brittle, deep brown; wood reddish, with obscure concentric rings.

Parts used: Radix

Constituents:

- Cyclic peptide alkaloids: cyclic peptines
- Triterpenes including ceanothusic acid, ceanothenic acid
- Other constituents include tannin (10%), resin, bitter component and gum

Pharmacology: In blood taken from young rats, an aqueous-ethanol extract of the drug reduced blood-clotting time by 25%. However, the results are difficult to assess.[512]

Medicinal actions: Astringent, antispasmodic, expectorant, hepatic stimulant, mild antiseptic. In addition, Cook described it as mildly stimulating with slight tonic qualities and nervine.

Traditional Medicinal Use:
Specific Indications and Uses: Enlarged spleen; sallow, doughy skin expressionless countenance; non-inflammatory, catarrhal states, with profuse secretion.

Cook considered Ceanothus to be medicinal, but not very powerful or reliable, whereas King described its use as effective for a variety of conditions.

- Gastrointestinal Conditions: Ceanothus was indicated in irritations of the mucous membranes including chronic diarrhea and *dysentery, particularly if subsequent to fever. It was also considered a gastric stimulant (although this seems associated with the shared vascular origins of the liver and spleen- see below).* It was useful as a wash in sore mouth and weak ulcers
- Gynecologic Conditions: As an douche, Ceanothus was used for leucorrhea.
- Hepatobiliary Conditions: Ceanothus was used as a gastric, hepatic, and splenic stimulant: it is in splenic troubles that it was most indicated. Deep-seated splenic pain, with or without splenomegaly, as well as for sympathetic imbalance secondary to a splenic condition call for Ceanothus. Its action was compared to *Silybum marianum*, influencing the hepatic, and more so the splenic vessels, overcoming congestion. It was also used for splenomegaly and *splenitis* of malarial origin: the cases of splenitis calling for Ceanothus are sub-acute when pressure does not markedly aggravate the pain.[513]
  It is also useful in portal hypertension with constipation.[514] For hepatic and splenic disorders the tincture of the leaves was preferred.
- Infectious Conditions: In syphilis and *gonorrhea* Ceanothus was considered a good alterative for milder cases.
- Pulmonary Conditions: In asthma and bronchitis, Cook considered Ceanothus a good alterative for milder cases while on the contrary King employed it for more severe, chronic pulmonary conditions including *chronic bronchitis and whooping-cough.*

Current Medicinal use:

- Dental Conditions: A methanol extract of Ceanothus americanus demonstrated antimicrobial activity against selected oral pathogens. Three triterpenes (ceanothic acid, 27-hydroxy ceanothic acid and ceanothetric acid) and two flavonoids (maesopsin and maesopsin-6-O-glucoside) were identified. Ceanothic acid and ceanothetric acid demonstrated growth inhibitory effect against Streptococcus mutans, Actinomyces viscosus, Porphyromonas gingivalis, and Prevotella intermedia. [515]
- Hepatobiliary Conditions: Ceanothus is a liver stimulant useful in congestive and inflamed conditions such as hepatitis, and headaches 2º hepatic congestion.
- Pulmonary Conditions: Ceanothus is a stimulating tonic to mucous membranes, especially of the respiratory tract causing expectoration, sedation of paroxysmal cough, and reduction of bronchial spasms . Thus, Ceanothus is useful in bronchitis, whooping-cough, and asthma.
- Topical Applications: It is also antiseptic and is useful as an oral mouthwash, gargle, and skin wash, making it useful in apthous ulcers, and skin ulcerations.

Current Research Review

- Search of Medline revealed no human studies as of November 2002.

Pharmacy: Decoction 1 tsp./cup; sig 1/2-1 cup TID
Tincture 1:5 45% EtOH; sig 2-3 ml TID ac

Contraindications: The use of tannins is contraindicated or inappropriate in cases of constipation, iron deficiency and malnutrition.[516] Tannin rich herbs may reduce the absorption of alkaloids and other basic drugs through precipitation.[517]

Toxicity: none reported

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[512] *Herbal PDR*, Medical Economics Company Inc., Montvale, NJ. 2001.

[513] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[514] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 326

[515] Li, X.C., Antimicrobial compounds from Ceanothus americanus against oral pathogens. *Phytochemistry*. 1997 Sep;46(1):97-102.

[516] Mills and Bone, p 170

[517] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 159

Centella asiatica (Hydrocotyle asiatica) **Umbelliferae (Parsley family)**

Common name: Gotu Kola, Brahmi (Sanskrit), Man t'ien hsing (Chinese).

Habitat: Indigenous to SE Asia, India, Sri Lanka, parts of China, Western South Sea Isl&s, Madagascar, South Africa, SE U.S., Mexico, Venezuela, Columbia, & Eastern South America.

Botanical description: *Flowers & fruit:* Pedicles are 1.2 to 1.4 cm long. Sepals of the epicalyx are oval to circular, w/ a membranous border & are about 2.5 to 3.0 mm long & 1.5 to 2.5 mm wide. Umbels have 2 or 3 sessile or short pedicled florets. Petals are white, to purple or pink. The calyx is not generally dentate. The fruit is oval to globose & has a diameter of 2 to 5 mm. Mericarps are flattened at the sides & usually have 7 to 9 ribs & are raised rugose. *Leaves & Stem:* A tender umbelliferous plant w/ numerous creeping stems, which have roots at the nodes & are glabrous. Circular-reniform leaves are 2 to 6 cm long & 1.5 to 5 cm wide, w/ a crenate margin & 5 to 9 ribs. The petioles are 3 to 30 cm long. Gotu Kola is considered almost tasteless & odorless.

Part used: Dried aerial parts, fresh & dried leaf & stem.

Energetics: Bitter. Cooling. Sweet. Equalizes – Vata, Kapha, Pitta. Affinity for all tissues, except reproductive. Mainly blood, marrow & nerve tissues. Systems – Nervous, Circulating, & GI.[518]

Constituents:[519]

- Triterpene acids: including madasiatic acid.
- Pseudosaponins (or Triterpene acid esters from oligosaccharide digestion): including asiaticoside, asiaticoside A & B.
- Volatile Oil.

Pharmacology:

Main constituents are thought to be the mixture of pseudosaponins, although an exact mechanism of action could not be found at this time of revision.[520]

Although the exact mechanism of action is sill unknown, Gotu Kola appears to mprove vessel integrity & help to reduce the symptoms of CT disease.[521] Hence, the following is a list of physiologic effects that Centella asiatica has shown through the use of animal models:[522]

1. Stimulates hair & nail growth.
2. Increases vascularization of connective tissue.
3. Increases the formation of structural glycosaminoglycans (chondroitin sulfate, hyaluronic acid).
4. Increases tensile strength of the dermis.
5. Increases keratinization of the dermis.
6. Possesses a balancing effect on connective tissue.

Medicinal actions: Nervine. Rejuvenative. Alterative. Febrifuge. Diuretic.

Current & Traditional Use:

Ayurvedic Indications: Nervous disorders, epilepsy, senility, premature aging, hair loss, chronic & obstinate skin conditions, venereal diseases. Gotu Kola is considered to be one of the most important rejuvenative herbs in Ayurvedic medicine. It is particularly revitalizing for the nerves & brain cells. Gotu Kola is used to increase intelligence, longevity, & memory & to decrease senility & aging. It cleanses & feeds the immune system, as well as strengthens the adrenals. Gotu Kola is also a powerful blood purifier, being specific for chronic skin diseases, including leprosy, syphilis, eczema & psoriasis. It is also helpful in intermittent fevers, like those of malaria.

Centella is a tonic & rejuvanative for Pitta, calms the nerves of Vatta, & helps to reduce excessive Kapha; hence it is considered an equalizer to the constitutional types. Gotu Kola is considered to be one of the most spiritual & sattvic of all herbs; being used by the Yogis of the Himalayas as food for meditation. It awakens the crown charka & helps to balance the two hemispheres of the brain. A cup of Centella tea can be taken w/ honey before meditation.

As a milk decoction, Gotu Kola makes a good nerve tonic. The powder is often used externally as a paste for chronic skin conditions. Centella is added to basil & black pepper for fevers. As a rejuvanative, it is best prepared w/ ghee (clarified butter).[523]

Current Research Review:

- **Cardiovascular Conditions:**
  - **Atherosclerosis:** TTFCA (total treterpenic fraction of Centella asica), in the dose of 60 mg TID po x 12 months, was found to be effective to increase the echogenicity and homogenicity of echolucent plaques at the femoral bifurcation in prospective randomized, placebo-controlled trial involving 60 patients. The composition of hypoechoic plaques is mainly due to lipid

accumulation or thrombosis, and such plaques are associated with an increased incidence of cerebrovascular events. TTFCA stabilized these plaques, lowering the risk of wall thrombosis, rupture, and embolization.[524]

- **Venous insufficiency:**
    1. A study of 94 individuals with venous insufficiency of the lower limb compared the benefits of Gotu kola extract (120 mg & 60 mg QD) against a placebo.[7] The results also showed a significant dose-related improvement in the treated groups in symptoms such as subjective heaviness, discomfort, & edema.[525]
    2. A review of all the Gotu kola studies performed concluded that Gotu kola extract demonstrates a dose-related improvement in venous insufficiency & related symptoms such as, foot swelling, ankle edema, & capillary permeability.[526]
    3. TECA (titrated extract of Centella asiatica) was found to be effective for the treatment of venous insufficiency in the dose of 120 mg or 60 mg qd x 2 months, in a multi-center, double-blind, placebo-controlled trial involving 94 patients. Symptoms of heaviness in the lower limbs and edema, as well as venous distensibility were improved.[527]
- **Venous hypertension:**
    1. In one study of people with experimentally induced venous insufficiency, 2 weeks of treatment with Gotu kola (total triterpenic fraction, 60 mg TID) was shown to reduce the time necessary for the swelling to disappear. [528]
    2. A placebo-controlled study (whether it was double-blind was not stated) of 52 patients with venous insufficiency compared the effects of Gotu kola extract (180 mg QD & 90 mg QD) against placebo. After 4 weeks of treatment, researchers observed improvement in various measurements of vein function in all treated patients, but not in the placebo group. They also found that the higher dose was more effective than the lower dose.[529]
    3. TTFCA was found to be effective, in the doses of 60 mg and 120 mg qd, in the treatment of venous hypertensive microangiopathy on both objective and subjective scales in a single-blind, placebo-controlled, randomized study. Higher dose was level was more efficient. The authors concluded that TTFCA can be safely used in venous hypertension in doses as high as 120 mg qd.[530]
    4. TTFCA was found to be effective in reducing both objective and subjective symptoms of venous hypertension in randomized controlled prospective clinical trial involving 62 subjects. Twenty patients were given 60 mg TID, 20 more patients were given 30 mg TID, 12 patients were treated with placebo, and 10 healthy subjects were treated with 60 mg TID x 4 weeks. After the treatment, objective symptoms (which included capillary filtration rate, ankle circumference, and ankle edema) and subjective symptoms (which included swelling sensation, restless lower extremity, pain and cramps, and tiredness) decreased in patients with venous hypertension in experimental groups. There was no change in the placebo group and in normal subjects. Dose of 180 mg/day was more effective in the improving the signs and symptoms of venous hypertension.[531]
- **Varicose veins:**
    1. Another study followed 87 people with varicose veins & compared the benefits of Gotu kola (60 mg & 30 mg QD) against placebo. Again, the results showed improvements in both treated groups, but greater improvement at the higher dose.[532]
    2. Subjects with varicose veins have increased mucopolysaccharide turnover, indicated by increased serum levels of the uronic acids and lysosomal enzymes involved in the mucopolysaccharide metabolism. TTFCA in the dose of 60 mg qd x 3 mo, decreased mucopolysacchired levels in the subjects with varicose veins during the treatment, and decreased levels of serum uronic acid and lysosomal enzymes (beta-glucoronidase, beta-N-acetylglucosaminidase, and arysulfatase) at the end of the treatment. The authors concluded that results of this trial provide an indirect confirmation of regulatory effects of the extract of Centella asiatica on metabolism in the connective tissue of the vascular wall.[533]
- **Diabetic microangiopathy:** TTFCA was found to be useful in diabetic microangiopathy in a clinical prospective randomized trial involving fifty patients. Thirty patients received TTFCA 60 mg TID x 6 months, 10 patients received placebo, and 10 patients received no treatment. After 6 months there was a significant improvement in the experimental group, and no significant changes in two control groups. Authors concluded that TTFCA is effective for treatment of diabetic microangiopathy by improving and protecting the microcirculation against deterioration and by decreasing capillary permeability.[534]

- **Anxiety**: A recent double-blind placebo-controlled trial of 40 normal individuals attempted to investigate Gotu kola's possible effects on anxiety in an indirect way.[1] The best way to would have been to use it on people who actually have anxiety. Researchers studied what's called the acoustic startle response; (the tendency to blink in response to a sudden loud noise). Evidence suggests that easy startling & chronic anxiety are related. Half the participants in this study were given 12g/day of Gotu kola, while the other half received a placebo. All were then subjected to occasionally produced bursts of noise. Measurements of eye blinking showed that treatment with Gotu kola significantly reduced the startle response to these noise bursts. The most dramatic effects were seen at 1 hour post ingestion.[535]
- **Mental ability:** One study demonstrated a significant increase in the mental abilities of developmentally delayed children. After 12 weeks the children wee more attentive & better able to concentrate.
- **Connective Tissue Conditions:**

- **Burns**: The standardized extract of Centella (topically and/or intramuscularly) was used effectively in patients with second & third degree burns. The extract reduced scar formation, increased healing, & decreased fibrosis.[536]
- **Cellulite:** The standardized extract has been used with success in a number of clinical studies on patients refractive to other therapies.[537]
- **Keloids:** The standardized extract has demonstrated efficacy for keloids in a number of clinical trials. The mechanism could be via reducing the inflammatory phase of scar formation while enhancing the maturation phase.[538]
- **Scleroderma:** The standardized extract has been tested in several trials with success. Centella decreased skin induration, improved finger mobility, & decreased pain.
- **Wound healing:** At least 17 studies have demonstrated Centella's effectiveness in greatly aiding wound repair. Examples of wounds healed include:[539] Epistiostomies & ENT surgeries, skin ulcers, traumatic injuries, gangrene, skin grafts.

- **Dermatological Conditions:** (the majority of clinical studies utilized standardized extracts containing 40% asiaticoside, 30% Asiatic acid, 30% madecassic acid, & 1-2% madecassoside 60-120 mg/day)
- **Hepatobiliary Conditions**: Three European studies conducted in the 1970s report on Centella in the treatment of fibrotic conditions of the liver.[540]

Pharmacy:

Contraindications/Toxicity:

Brinker states that empirical evidence suggests that Centella has an emmenagogue effect; therefore, internal should be avoided in early pregnancy.[541]

Caution: May aggravate itching, in large doses may cause HA or temporary loss of consciousness.[542]

Large amounts can induce headache, dizziness, stupor, pruritis, as well as bloody passages from the bowels.[543]

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[518] Frawley D, Lad V. *The Yoga of Herbs: an ayurvedic guide to herbal medicine.* Lotus Press, Twin Lakes, Wisconsin, 1992:170-2.

[519] *PDR for Herbal Medicines.* Medical Economics Company, Montvale, NJ, 1999:730.

[520] *PDR for Herbal Medicines,* 730.

[521] Lininger et al. *Healthnotes: Clinical Essentials, Herb Monographs*. Prima Publishing, Rocklin, CA, 2001.

[522] Pizzorno JE Jr, Murray M. *The Textbook of Natural Medicine, 2nd ed.* Churchill Livingstone, NY, NY, 1999:653.

[523] Frawley, 170-2.

[524] Incandela L, Belcaro G, Nicolaides AN, et al. Modification of the echogenicity of femoral plaques after treatment with total triterpenic fraction of Centella asiatica: a prospective, randomized, placebo-controlled trial. *Angiology* 2001; 52 Suppl 2:S69-73.

[525] Pointel JP, Boccalon H, Cloarec M, et al. Titrated extract of *Centella asiatica* (TECA) in the treatment of venous insufficiency of the lower limbs. *Angiology*. 1987;38:46–50.

[526] Cesarone MR, Laurora G, De Sanctis MT, et al. Activity of Centella asiatica in venous insufficiency. *Minerva Cardioangiol*. 1992;40:137–43.

[527] Pointel JP, Boccalon H, Cloarec M, et al. Titrated extract of Centella asiatica (TECA) in the treatment of venous insufficiency of the lower limbs. *Angiology* 1987;38(1 Pt 1):46-50.

[528] Belcaro GV, Grimaldi R, Guidi G. Improvement of capillary permeability in patients with venous hypertension after treatment with TTFCA. *Angiology.* 1990;41:533–40.

[529] Belcaro GV, Rulo A, Grimaldi R. Capillary filtration & ankle edema in patients with venous hypertension treated with TTFCA. *Angiology.* 1990;41:12–8.

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[531] De Sanctis MT, Belcaro G, Incandela L, et al. Treatment of edema and increased capillary filtration in venous hypertension with total triterpenic fraction of Centella asiatica: a clinical, prospective, placebo-controlled, randomized, dose-ranging trial. *Angiology* 2001;52 Suppl 2:S55-9.

[532] Cesarone MR, Laurora G, De Sactis MT, et al. The microcirculatory activity of *Centella asiatica* in venous insufficiency. A double-blind study. *Minerva Cardioangiol*. 1994;42:299–304.

[533] Arpaia MR, Ferrone R, Amitrano M, et al. Effects of Centella asiatica extract on mucopolysaccharide metabolism in subjects with varicose veins. *Int J Clin Pharmacol Res* 1990;10(4):229-33.

[534] Cesarone MR, Incandela L, De Sanctis MT, et al. Evaluation of treatment of diabetic microangiopathy with total triterpenic fraction of Centella asiatica: a clinical prospective randomized trial with microcirculatory model. *Angiology* 2001;52 Suppl 2:S49-54.

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[536] Pizzorno, 653

[537] Pizzorno, 653

[538] Pizzorno, 653

[539] Pizzorno, 654

[540] Pizzorno, 653

[541] Brinker F. *Herb Contraindications & Drug Interactions.* Eclectic Medical Publications, Sandy, OR 1998:78

[542] Frawley, 170-2.

[543] Felter

Cephaelis ipecacuanha

Rubiaceae

Common name: ipecac

Habitat: The plant prefers the undergrowth of the tropical rain and cloud forests of South America.

Botanical description: A low shrub up to 40 cm in height. The stem becomes woody near the ground. Leaves up to 7 cm long, oblong, with an entire margin. Bisexual flowers in hemispherical clusters. The root is slender, tortuous, reddish-brown and up to 4 mm in diameter.

Parts used: Root, rhizome

Constituents: Isoquinoline alkaloids (2%-4%)—emetine, cephaeline, psychotrine, and others; Iridoids – sweroside, 7-dehydrologanin; Sapponins, Glycosides, Starch, Resins, Choline

Pharmacology: The alkaloids in Ipecac (primarily emetine and cephaeline) promote increased mucocilliary activity by reflex stimulation of the upper digestive wall.[544] Its irritation of the stomach creates a reflex stimulation of the ascending branch of parasympathetic nerves. In turn, this causes a reflexive hydration of the mucous in the lungs thus facilitating expectoration.

Medicinal actions: Expectorant, emetic, stimulant, diaphoretic, amoebicide

Medicinal use:

- Gastrointestinal Conditions: An application of the gastric irritation caused by ipecac is its use as an emetic. In higher doses (see pharmacy section below), ipecac will act as an emetic. The main application of this is in the emergency treatment of ingestion of non-caustic poisonous substances. U.S.P. ipecac syrup is the most common preparation. Ipecac syrup induces vomiting by gastric irritation. The onset of vomiting usually occurs 20-30 minutes after oral administration. The effects persist for 20 to 25 minutes. Ipecac syrup is used after accidental ingestion of poison with the exceptions of volatile oils (vomiting may cause aspiration and lead to bronchospasm, pulmonary edema, or aspiration pneumonitis), caustic substances (vomiting may induce additional injury to esophagus). Be aware that some bulemics use ipecac syrup to purge. The Eclectic physicians used ipecac as a method of stimulating the entire gastrointestinal system.
- Infectious Conditions: A second area of medicinal application is as an amoebicidal agent. The emetine alkaloid has been demonstrated to be amoebicidal against Entamoeba histolytica. Practitioners in India the early part of this century used ipecac to treat amebic hepatitis. This use is also common in South America where the plant grows and where amoebic dysentery is endemic.
- Pulmonary Conditions: Ipecac is an excellent expectorant. Ipecac is included in many cough preparations for its expectorating properties. It is most indicated in chronic bronchitis and I\n acute bronchitis with a relatively dry cough with moderate amounts of thick mucous that is difficult to expectorate. Mild coughs with non-viscid mucous do not respond well to ipecac.

According to Mills and Bone:[545]

The traditional indications for emetics is poison ingestion. However, emesis has been demonstrated as an inefficient way to remove poison material, as appreciable amounts can be pushed into the small intestine. Other traditional uses include any acute toxic or infective condition and bronchitis. Emetics were used as a first line of treatment for enteric and bronchitic infections and for any evidence of biliary toxicity. It was always understood that their use was essentially debilitating so a rubust constitution was an essential prerequisite.

Cephaelis also contains sapponins, which are also engaged in the treatment of bronchial congestion and digestive difficulties. If used in small doses, then the sapponins act as tonics for debilitating conditions. In Chinese medicine, sapponin rich herbs are used as tonics and harmonizing components of formulas.

According to King:[546]

Ipecac, in material amounts, is irritant to the cutaneous and mucous surfaces. Ipecac produces a relaxation of the skin and consequent diaphoresis. Therapeutically, ipecac is a very important remedy. It has three chief fields of operation: (1) In large doses it provokes emesis, and for this purpose it may be employed as suggested below; (2) it checks active hemorrhages; (3) it relieves gastro-intestinal and broncho-pulmonic irritation and inflammations.

Specific Indications and Uses: In small doses it is used to relieve *irritation*, no matter what the disease may be. The specific action of ipecac is best observed in acute affections, when there is hyperemia, capillary engorgements, and hypersecretion. Specific indications include: as an emetic for overloaded or foul conditions of the stomach and other conditions indicating emesis; active hemorrhages; irritative diarrhoea; acute bowel disorders with irritation; long, pointed tongue, with reddened tip and edges, accompanied with nausea and vomiting, and with or without fever; dyspnoea; irritative cough; hoarseness from cold; hypersecretion, with mucous rales (small doses); diminished expectoration (nauseant doses).

- Cardiovascular Conditions: Physiologically speaking, ipecacuanha is said to scarcely affect the circulation, but there is no doubt

that in minute doses in disease, it stimulates the circulatory apparatus, acting thereby as a *special sedative*, as that term is employed in Eclectic therapy. Its therapeutic action upon the circulation is well shown in its effects upon *hemorrhage*; and in *acute* disorders of the stomach, bowels, and breathing organs.

- Gastrointestinal Conditions: Ipecac, in doses of less than 1 grain, acts as a gastric tonic and hepatic stimulant, but large doses prove emetic. When it fails to produce emesis, catharsis usually results, though both effects may take place from its employment. The stools produced by this agent are of the so-called bilious type, and have been denominated "ipecacuanha stools."

Ipecac is a specific emetic, and the mildest of its class being safe even in large doses, seldom producing painful spasms of the stomach or bowels, and causing less prostration of the vital forces than synthetic emetics. As such, in 20-grain doses, it causes nausea and continued muscular straining, with a free secretion of mucus; vomiting, however, seldom takes place until 15 or 20 minutes after its administration. It is best employed in combination with other emetics, such as Lobelia, and is preferred to any other emetic in the early stage of *febrile diseases*, and in other instances where a severe succussion of the system is indicated.

Ipecac is the best emetic for unloading the stomach of undigested aliment, and acute *indigestion, bilious attacks,* accompanied with sick *headache,* In *nausea,* with a broad, flabby, and slimy tongue, give ipecac in full emetic doses. Repeated doses of the powder in sweetened warm water, until emesis takes place, are useful in the *convulsions* of children, *cramps, colic,* etc., arising from intestinal irritation, though it is less effectual than Lobelia and Gelsemium combined.

While ipecac is an emetic, it has long been well-known as a remedy to check *nausea* and *vomiting*. This is best accomplished by it when the tongue is red and pointed, and shows evidence of irritation. If the condition depends upon foul accumulations within the stomach, the emetic action will be first required, after which the small doses may be continued to control irritation, if present.

The chief indications pointing to the sole or associate use of ipecac, in stomach and bowel disorders, are the elongated and pointed tongue, with reddened tip and edges, with large papillae, or effacement of the papillae; tenderness on pressure; contraction of tissues; pinched countenance, white line around the mouth; tendency to nausea and vomiting, with or without eructations; and marked hyperaesthesia. There is evidence of hypersecretion, sympathetic irritation and capillary engorgement, and the cases are acute.

With these indications well in hand, it will be found of great service in *gastric irritability, nausea,* and *vomiting* (if not from organic stomach lesions), and *acute mucous diarrhoea*.

In the *diarrhoea of teething*, with tongue coated white, and stools green, bloody, and offensive, an associated with nausea, ipecac serves a useful purpose. For the offensive element chlorate of potassium may be associated with it, and for t he peevishness and fretfullness usually present, matricaria. In *simple diarrhoea*, due to undigested and irritating food, an emetic or cathartic is preferable to small doses of ipecac, though the latter should be given to control after-irritation. In simple *irritative diarrhoea*, nux should be given with it when the preceding symptoms are present.

No remedy, with the exception of magnesium sulphate, gives better results in *acute dysentery*, combined with proper diet and absolute rest upon the back. Ipecac is specially adapted to cases of spo*radic dysentery,* and is less effectual in zymotic cases, unless associated with antizymotic treatment. Dysentery has been treated with large doses of the powdered drug, sufficient to produce catharsis, but this method is less efficient than that indicated above. Formerly, 1 grain each of dried extract of leptandra and ipecacuanha, and 1/2 grain of resin of podophyllum, given every 3 hours until it operated freely, was considered an excellent remedy for *dysentery*. It is a valuable remedy in *muco-enteritis.* It should be associated with aconite or epilobium.

In *acute cholera infantum*, with small and frequent mucoid passages, it should be given early. It is of less value where the stools are profuse and watery. Though less valuable in chronic than in acute diseases, it is applicable in *chronic cholera infantum*, with pallid tongue, nausea, vomiting, abdominal pain, and pallid or yellowish face. But in this case nux vomica should be given with it (Scudder).

- Gynecologic Conditions: In *menorrhagia*, 20 grains of the powder at bedtime, followed by a saline cathartic in the morning, has, in the hands of several practitioners, promptly checked the discharge.
- Inflammatory Conditions: The specific use of ipecacis to relieve *irritation,* no matter what organ is affected. With this may be vascular excitation, which is probably due to the irritated condition of the sympathetic nervous system (the patient may be irritable and the skin is heightened in color).

Its beneficial effects are particularly noticeable in *acute* irritative and inflammatory disorders of the stomach and bowels. Small doses of ipecac may follow to relieve irritation. In *intermittent fever*, and particularly in *chronic ague*, where quinine is ineffectual, the system may be gradually brought under the emetic action of ipecac, after which the quinine will give better results, and may even not be needed.

In *fevers* and *inflammatory affections*, small diaphoretic doses of ipecac have been highly beneficial. Its action in these cases is also beneficial upon the nervous system and mucous membranes. Excitability and suppressed secretions being symptoms, it acts favorably in the *eruptive fevers*. Formulations with the powder are very efficient in the *night-sweats of consumption*. It will likewise act as a sedative in many local inflammatory diseases, and will be found extremely valuable in *peritonitis*, even the worst form occurring in puerperal women. It is also of value in *acute rheumatism, gout, jaundice* from biliary catarrh, and to relax the parts in the passage of small *biliary calculi*.

- Hemostatic Properties: Owing to its evident action upon the capillaries, it is a valuable agent in *active hemorrhages—post-partum, hemoptysis, hematemesis, hematuria, epistaxis,* and *hemorrhages from the bowels*. The cases calling for it are usually those of nervous individuals, with marked irritability and vascular excitation. Under similar conditions it is of value in *menorrhagia* and *metrorrhagia*. It is sometimes of value in *hemorrhoids,* especially when of the bleeding variety. It may be associated with hamamelis, aesculus, or collinsonia as indicated.

- Pulmonary Conditions: Ipecac is a remedy of first importance in many respiratory disorders and it increases the broncho-pulmonic secretions. These conditions are similar to those indicating its employment in gastro-intestinal diseases(irritation, capillary engorgement, and hypersecretion). Thus, it is associated with the special sedatives and Asclepius and bryonia. It is a very valuable agent, in *hoarseness* or *congestion of the vocal cords, broncho-pulmonary congestion* from *colds*, *irritable and spasmodic coughs,* and in the early stage of *acute catarrhal affections, dyspnoea of pregnancy,* and *pertussis.*

In *colds, capillary bronchitis, acute bronchitis,* and *pneumonia,* particularly of children, it has an important place. It acts chiefly on the bronchioles and the parenchyma of the lungs, allaying irritation, relieving cough, and diminishing expectoration when profuse (small, stimulant doses), and aiding expectoration when scanty (large, nauseant doses). *Bronchitis* in children, with dry, hoarse, croupal cough, is often cut short by the emetic action of ipecac.It also answers well in subacute cases. It has been found very useful in *typhoid pneumonia* in combination with sulphate of quinine. In *spasmodic asthma* (less valuable than lobelia), *hysteria, pertussis, sore throat, common catarrh,* and *stricture of the chest* common in *phthisis (wasting),* ipecacuanha, as an emetic, will sometimes be found very beneficial.

In dry forms of *cough* it may be given in nauseant doses; in hypersecretion, in small or stimulant doses; in spasmodic cough, with bloody expectoration, frequently repeated doses short of nausea.

In *croup* and *membranous croup*, when the secretions are well loosened, ipecac is a useful emetic. In *mucous* croup; small doses should be combined with aconite. In *membranous croup* it has been recommended with bryonia.

- Ophthalmologic Conditions: Doses of from 1/10 to 1/5 drop of specific ipecac give prompt relief in the majority of cases of *phlyctenular diseases of the eye* (small red nodules of lymphoid cells with an ulcerated apex in the conjunctiva) with photophobia, the latter symptom being quickly subdued by it.

Pharmacy: A state of tolerance may be established from the prolonged use of ipecac. Ipecac is often employed to assist the action of other agents, particularly agents to act upon the bowels, and with other agents which control irritation. In particular, the special sedatives: aconite, veratrum, gelsemium, and rhus, and such other irritation-relieving remedies, as matricaria, amygdalus, epilobium, bismuth, magnesium sulphate (small doses), collinsonia, hydrastis, and bryonia, may be indicated with ipecac. In fact, where the indications for ipecac are present, it will materially aid the action of these remedies, one or more of which are usually necessary, as ipecac seldom covers the whole range of symptoms present in these cases.[547]

Saponin-rich plants may be taken before meals of if there is a sensitive stomach immediately after eating. Long-tem therapy with saponin-rich plants involves small dosages unlessbenefits are apparent and diminish after withdrawal of treatment.[548]

Tea is not recommended because of the problem of directly assessing content of constituents.

Powdered herb:

Expectorant: 0.25 – 0.5 g daily in divided doses (Alschuler)
1/4 to 1 grain, rubbed up with sugar for *pneumonia* of children (King)

Emetic: .5-2 g daily in single dose (Alschuler)

Acute dysentery: Specific aconite, gtt. v; specific ipecac, gtt. x to xv; magnesium sulphate, i; aqua, fl iv. Mix. Dose, I teaspoonful every hour. Small doses of diaphoretic powder (containing ipecac) are also useful in dysentery.

Powdered herb doses according to King: It must be remembered that sometimes powdered ipecac will do that which no fluid preparation of ipecacuanha can accomplish.

1/4 to 1/2 grain	it acts as a tonic, improving digestion, increasing the appetite, and is valuable in *irritative dyspepsia*.
½ grain	expectorant, stimulant
1/2 to 2 grains	administered every 3 or 4 hours, it produces perspiration, and is beneficial in *febrile* and *inflammatory diseases*; combined with opium its diaphoretic influence is greatly augmented. Hemostatic
3 to 10 grains	will produce nausea, which may be continued for any length of time, and which is attended with more or less depression of the pulse, languor, moisture of the skin, and an increased mucous discharge from all the mucous tissues of the system, which renders it very useful in *pulmonary* and *hepatic diseases*.
5 to 15 grains	moves the bowels
20 grains or more	emetic

1:5 tincture may be used in small doses – 0.25-1ml/ dose (Alschuler)

Syrup of ipecac: in children 1-12 yrs old: 15 ml, followed by 4 to 8 oz. of water (Alschuler)

Specific Tincture:

Sig: the fraction of a drop to 20 drops. The usual prescription for specific purposes is Rx Specific ipecac, gtt. v to xx; aqua, fl iv. Dose, 1 teaspoonful every 1 or 2 hours (King)

Injection (retention enema):

For the emetic effect when it can not be given by the mouth, it may be used in injection, adding 2 drachms of the powder to 1 pint of warm water, for an adult (King)

Contraindications:

The use of emetics are contraindicated in the following:[549]

- poisoning associated with coma or convulsion

- poisoning with petroleum products or corrosive substances
- strychnine poisoning
- any debilitated condition or constitutional weakness

Sapponin rich herbs are contraindicated topically on open wounds, in celiac disease, fat malabsorption and fat soluble vitamin deficiencies.[550]

Specifically, Cephaelis is contraindicated in pregnancy (emperical, animal studies), organic heart disease (empirical) and in children less than one year of age (empirical).[551]

Toxicity: Depression, drowsiness, arrhythmias, bradycardia, hypotension, atrial fibrillation, fatal myocarditis. Activated charcoal is an antidote to ipecac toxicity (Alschuler).

If the powder of ipecac contacts the skin, there may be erythema followed by pustules which may form into ulcers where it repeatedly contacts the skin (Alsculer).

It is exceedingly irritating to the Schneiderian (nasal) membrane, causing heat and violent sneezing. In some individuals, the inhalation of the powdered drug provokes paroxysms resembling a spasmodic asthmatic attack: the chief symptoms are dyspnoea, with marked anxiety and prostration, and wheezing respiration and cough. This is often accompanied with violent and prolonged sneezing and spitting of blood. Such attacks are usually followed by a free expectoration of mucus.[552]

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[544] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000.

[545] Mills and Bone p. 169-70

[546] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[547] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[548] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 170

[549] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 169; Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 86

[550] Mills and Bone p. 170

[551] Brinker, p 86

[552] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

Chamaelirium luteum

Liliaceae

Common name: False Unicorn Root, helonias root

Habitat:

Botanical description: A perennial herbaceous plant with a large bulbous rhizome. The stem is angular, smooth, and grows to a height of 1-3 ft. The basal leaves are broad 4-8 in. long and lanceolate. The stem leaves are alternate spatulate to lanceolate. The flowers are arranged in dense terminal racemes and are greenish-white.

Parts Used: Root

Constituents: Steroidal sapponins: chamaelirin and helonin (based on diosgenin)

Medicinal actions: Uterine tonic, diuretic, emetic, vermifuge, sialagogue (fresh plant only), bitter, (emmenagogue?- Brinker)

Medicinal use: In summary, Chamaelirium is a stimulating tonic to the body overall, with an especially pronounced effect on the pelvic organs.

Chamaelirium is one of the most profound pelvic organ tonics (for both men and women). It nourishes the pelvic organs and promotes their secretions. Its specific indication is a dragging sensation in the extreme lower abdomen (i.e. organ prolapse).

- Gynecologic Conditions: This plant is particularly useful in dysmenorrhea, amenorrhea, and threatened abortion. Chamaelirium is most helpful in cases of amenorrhea and oligomenorrhea due to uterine atony and ovarian insufficiency.

Chamaelirium is used for dysmenorrhea when there is a bloated sensation in the abdomen with an aching feeling of the uterus being distended with blood. In a similar sense, Chamaelirium will aid in excessive menstruation associated with an atonic uterus through its uterine strengthening effects. It is phytoestrogenic, and acts amphoterically in situations of hormonal imbalance. It combines well with Cimicifuga racemosa or Aletris farinosa in atonic conditions of the uterus (and pelvis).

Chamaelirium can be used to prevent miscarriage, especially in women with a history of repeated miscarriages. It combines well with Viburnum prunifolium for uterine irritation (i.e. threatened abortion).

- Genitourinary Conditions: It tonifies the genito-urinary system in both sexes. Generally, Chamaelirium is indicated in persons tending toward systemic weakness, enfeeblement, mental apathy, with manifestations of this weakness in the pelvic organs. Chamaelirium is well-indicated in conditions of pelvic weakness from excessive sexual activity, in that it imparts tone and vigor to the sexual organs (male and female).
- Gastrointestinal Conditions: Chamaelirium is a digestive tonic. It seems to help with dyspepsia, anorexia, and intestinal maldigestion, especially when these conditions are associated with reproductive disorders (organ atony, hormonal imbalance). It is also helpful when there is digestive, liver, or kidney insufficiency.
- Gynecologic Conditions: Chamelirium supports estrogen function in the body being indicated in dysmenorrhea, menorrhagia, and perimenopause. In functional secondary amenorrhea, Chamelirium can be used to correct hypothalamic dysfunction to achieve hormone balance, as in combination with Vitex or Caulophyllum. Such effect can be utilized in excessive anovulatory cycles as well.

As a general pelvic tonic Chamelirium is indicated in pelvic inflammatory disease in combination with Dioscorea. It is utilized in threatened miscarriage in combination with Vitex.

In fibroadenoma of the breast, estrogen promoting herbs like Chamelirium may be beneficial as fibroadenoma is a defect of normal lobule development, which is influenced by estrogen.

Specific indications for Chamelirium are mental irritability and despondency; sexual lassitude; atony of the female reproductive organs; gastric debility, with anorexia, nausea, indigestion, and malabsorption, particularly when due to reflexes of uterine origin; sticky, slimy leukorrhea; atonic urinary tract; dysmenorrhea with pelvic fullness and heaviness, as if congested, with a bearing-down sensation, as if the parts were about to fall out.

Dr. King found this plant to possess a decidedly beneficial influence in cases of sexual lassitude in both sexes and of *nocturnal emissions*, the result of excesses, especially in those instances where there are symptoms of gastric derangement with impaired memory, mental apathy or indifference and an enfeebled condition of the general system with weakness or dull pain in the renal or lumbosacral region.

In comparison to Aletris, Chamelirium is chiefly a uterine tonic while Aletris is more adapted to digestive disorders.

- Gastrointestinal Conditions: Chamelirium has been beneficially used in *dyspepsia, loss of appetite and removal of worms*. It is especially indicated for *indigestion, dyspepsia and malabsorption* where the root of the cause in a reflex from or associated with disorder of the female reproductive system such as uterine or ovarian irritation or lack of uterine activity.
- Genitourinary Conditions: It is a decided tonic to the urinary tract and has exerted some benefit in *diabetes insipidus*. It is said to render the urine alkaline.

- Gynecologic Conditions: It is reputed to be valuable in *atony of the generative organs,* gradually removing abnormal conditions while imparting tone and vigor. Hence it is much used in *leukorrhea, amenorrhea, dysmenorrhea* and to remove the tendency to repeated and successive *miscarriages*. It removes the irritability and despondency that often attends uterine troubles.

  In *painful menstruation* it has been found especially adapted to those cases in which there is pelvic fullness, a sensation as if the womb and rectum were distended with blood and the aching, bearing-down organs feel as if they would fall out of the body. Its action here is very decided when the smaller doses are employed.

  It is considered useful by some for the relief of vomiting of pregnancy.

According to Cook:[555]

The root of Helonias is a strong bitter and one of the most distinctly stimulating of all tonics. It acts very generally upon the system, including in its range the salivary glands, respiratory organs, stomach, gall-ducts, uterus and ovaries.

- Gastrointestinal Conditions: It stimulates the salivary flow. In atonic dyspepsia, it promotes appetite and stimulates the gastric secretions; and at the same time arouses the biliary ejections and stimulates the bowels to cast out foul mucous and other accumulations. It thus facilitates catharsis in cases of alvine alangour and sometimes expels worms; but it is not to be classed as a distinct cathartic.
- Pulmonary Conditions: It excites the fauces and respiratory passages and promotes expectoration, for which purposes it is useful in greatly depressed and atonic conditions of the lung.
- Gynecologic Conditions: Its most prominent and valuable action is upon the uterine organs; where it scarcely has an equal in atonic forms of prolapsus, leukorrhea, passive hemorrhage and menorrhagia and similar enfeebled conditions. While its use in sensitive patients and irritable uterine conditions is to be avoided, it can be employed to the greatest advantage in flaccid and prostrated states for the maladies named above. Though in no sense and astringent, its tonic influence is peculiarly efficacious in arresting too excessive menstruation and lochia, when associated with laxity and depression; and it rarely fails to arrest a threatened abortion arising form the same conditions. It has been reported that a full dose (?) will arrest natural menstruation for 48 hours if taken when the discharge first showed itself; and this without the least disadvantage to the woman. That these influences over the uterine function are due to the pure tonic action of the agent is at once seen in the fact that it is a valuable article to restore the menstrual flow when this is absent from sheer in ability of the generative organs.
- Genitourinary Conditions: Helonias has been used in atony of the kidneys, Bright's disease and diabetes where it distinctly diminishes the amount of saccharine flow in the latter malady.

Pharmacy: Helonias is seldom administered alone; but is most frequently employed in combination to give intensity to more relaxing and less positive agents. (Cook)

For expectorant effects, combine with Aralia and Eupatorium perfoliatum. (Cook)

For tonic effects, combine with Frasera, Populus, Hydrastis and other agents. (Cook)

Powdered root:

1-2 g (Alschuler)

10-15 grains, tid-qid (15 grains ~ 1g) for digestive complaints (King)

20-40 grains (King)

Decoction: 1 tsp./cup water; sig 1 cup TID (Alschuler)

Tincture:

1:5 45% EtOH; sig 3-5 ml TID (Alschuler)

1 lb. crushed root is macerated for two days with sixty percent alcohol then percolated, sig 3-5 gtt in simple syrup

Specific Tincture: 1-20 gtt (King)

Fluid extract 1:1 45% EtOH; sig 1-2 ml TID (Alschuler)

Contraindication: Given the estrogenic effect of Chamelirium, it should be avoided in conditions of estrogen sensitivity or excess such as uterine myoma and endometriosis.

Chamelirium should never be used in sensitive conditions of any organ system.[556] In particular, it is a mucosal irritant that should be avoided in inflammation of the alimentary tract.[557]

Toxicity: In large doses, it is a cardiac poison.

CHAMAELIRIUM LUTEUM IS ONE OF OUR MOST ENDANGED SPECIES, CLOSE TO EXTINCTION ACCORDING TO UNITED PLANT SAVERS.

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[553] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 239-46

[554] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983, p. 489-90

[555] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy… Eclectic Medical Publications, Sandy, OR 1985 p. p 467-8

[556] Cook, p 467

[557] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 152

Chelidonium majus

Common name: Greater Celandine

Habitat:

Botanical description:

Part used: root, herb

Historical use:

Energetics: No information is currently available

Constituents: Greater celandine, like other members of the Papaveraceae (poppy) family, contains alkaloids as its main active compounds.

- Isoquinoline alkaloids including coptisine (main alkaloid), Chelidoxanthine, chelidonine, chelidonine, berberine [558]

Pharmacology: Animal and in vitro studies have shown that the alkaloids and whole plant extract can relieve gallbladder spasms and stimulate an under-active gallbladder.[559] In vitro and animal studies have also shown celandine extracts and its alkaloids to have anti-inflammatory, anti-cancer and anti-microbial properties. They have also consistently shown Chelidonium's ability to protect animal livers from toxic substances. [560]

Medicinal actions: Stimulant, acrid, alterative, diuretic, diaphoretic, purgative, and vulnerary.

Traditional Medicinal Uses:

Specific Indications and Uses: King listed: large, pale, sallow tongue and mucous membranes, sometimes greenish yellow; skin pale and sallow, sometimes greenish; hepatic congestion; jaundice, due to swollen bile ducts; sluggish hepatic action; cough, with hepatic pain; fullness, with tensive or throbbing pain in the right hypochondrium, and pain extending to right shoulder; melancholia, headaches, and gastric disorders, dependent upon faulty action of the liver.[561]

Ellingwood added: deficient glandular function within the abdomen, sluggish circulation within the abdomen. The specific external use is in the application of the juice to warts and corns. He further described the patient picture of Chelidonium as a patient suffering from a headache which began in the occiput before rising in the morning; poor appetite; cold hands and feet; tongue large, thick, pasty, with a grayish color; cool skin of a dusky color. [562]

- Dermatological Conditions: Chelidonium was used for scrofula, cutaneous diseases, and piles.
- Gastrointestinal Conditions: Bilious dyspepsia, with headache, and other gastric and intestinal disturbances, due to faulty action of the liver, were well treated with it.
- Hepatobiliary Conditions: Used in hepatic affections, it was supposed to exert a special influence on the spleen. It was said to influence tissues innervated by the branches of the solar plexus (celiac plexus?), and with blood from the hepatic artery, and to some extent by the splenic artery.[563] Congestion or irritation/inflammation of the liver, spleen or pancreas all respond to Chelidonium as it stimulates the circulation of these organs.[564]

  Both acute and subacute forms of hepatic inflammation, when suppuration was not present, indicated Chelidonium as were migraines, bilious headaches and supraorbital neuralgia (considered a hepatic associated headache). Hepatobiliary conditions due to capillary engorgement of the viscera indicated Chelidonium. It is one of the best of remedies for biliary catarrh resulting from hepatic congestion, biliary calculi and for jaundice due to obstruction of the bile ducts. Thus, any condition with decreased bile secretion called for it. In particular, it is utilized in the prevention of biliary calculi. Full, tensive, or throbbing pain in the right hypochondrium, and pain extending to beneath the right scapula, are the guides to its use in these hepatic disorders.[565] In addition, Scudder stated that the mucous membranes enfeebled and full, right hypochondrium full, abdomen tumid, feces light in color, and urine of high specific gravity, and pale, but cloudy. As a rule there is no general abdominal pain. Edema of the extremities is sometimes an added indication.[566]
- Topical Applications: The juice, when applied to the skin, produces inflammation and vesication. This use was known as a caustic for the removal of warts, indolent ulcers, fungous growths, etc as well as in removing specks and opacities of the cornea. Celandine was considered superior to Arnica as a vulnerary for traumatic inflammations and was used internally in decoction or tincture, and externally in poultice or ointment.

Current Medicinal uses:

- Hepatobiliary Conditions: A number of uncontrolled clinical trials have demonstrated the spasmolytic and cholagogue effects of Chelidonium which may be beneficial in gall bladder colic. [567] Numerous herbs known variously as cholagogues and choleretics have a reputation for helping prevent gallstones in traditional herbalism. Cholagogues are herbs that stimulate the gall bladder to contract, while choleretics stimulate the liver to secrete more bile. Both of these actions could potentially help reduce the risk of developing gallstones. No modern studies have been done to test these hypotheses. Artichoke, turmeric, fumitory, fringe tree, greater celandine, dandelion root, barberry, and Oregon grape are cholagogues and choleretics.[568]

Current Research Review:

- **Gastroenterology:**
  - **Cholangitis, cholelithiasis and cholecystitis:**[569]
    - Design: Uncontrolled clinical trial
    - Patients: Forty patients with cholangitis, cholelithiasis and cholecystitis without stones
    - Therapy: Chelidonium fresh plant tincture standardized to 20 mg alkaloids per 100 ml; sig 3 ml qd x 43-50 d.
    - Results: Chelidonium extract exerted good to very good results in 2/3 of patients.
  - **Abdominal pain:**[570]
    - Design: Uncontrolled clinical trial
    - Patients: Six hundred and eight patients with cramp-like pains in the gastrointestinal tract (43%) or gall ducts (48.2%).
    - Therapy: Standardized preparation of dried Chelidonium. 5 tablets qd (2.85mg of total alkaloids including 0.79 mg chelidonine/ tablet) initially, then 3 tablets qd in patients who responded to treatment. Average duration: 22 days, longest – 2.5 months.
    - Results: Good or very good therapeutic effect on symptoms with a quick response in 87.4% of cases. Symptom relief occurred within 30 min of taking the medication in 62.3% cases. In 46.1% of patients, the average duration of efficacy of each tablet was better than 3 hours. Chelidonium was found to be efficient for treatment of cramp-like abdominal pains associated with IBS and other causes.
  - **Colonic polyposis:**

    Study 1:[571]
    - Design: Uncontrolled clinical trial
    - Patients: Patients with colonic polyposis
    - Therapy: Enemas with infusion of dried Chelidonium
    - Results: Administration of 10 or more enemas resulted in complete disappearance of colonic polyps in several cases.

    Study 2:[572]
    - Design: Uncontrolled clinical trial
    - Patients: One hundred and forty nine patients with colonic polyposis treated over a two-year period.
    - Therapy: Enemas with infusion of dried Chelidonium followed by fresh plant paste 2-3 hrs after an evacuant enema. Two-three courses consisting of 10-20 enemas each.
    - Results: This therapy was inefficient for treating malignant regenerated or degenerated polyps. Out of 149 patients with various forms of polyposis, 87% of patients showed improvement with 27% making a complete recovery.
  - **Biliary dyskinesia:**[573]
    - Design: Randomized placebo-controlled double-blind multicenter clinical trial
    - Patients: Patients with dumpy or colicky RUQ abd pain d/t biliary dyskinesia. 39 patients – experimental, 37 patients – placebo.
    - Therapy: Cholagogum F Nattermann (dried extracts from Schollkraut and Curcuma) x 3 weeks
    - Results: Reduction of pain was more rapid during the 1st tx week in the experimental group. Reduction of other complaints (feeling of being filled up, food intolerance, n/v, meteorism) was similar in both groups during the whole tx period. No SE were observed.
- **Dermatology:**
  - **Warts:** [574]
    - Design: Uncontrolled clinical trial
    - Patients: Nursing mothers with warts, papillomas, condylomas and nodules.
    - Therapy: Alcohol extract of Chelidonium topically to the affected area ~ 200 x/day x 2-3 weeks or until improvement was noted.
    - Results: Complete resolution of warts after 15-20 days in 135 women.
- **Pulmonology:**

- **Chronic bronchitis:**[575]
  - Design: Uncontrolled clinical trial.
  - Patients: Chronic bronchitis patients
  - Therapy: Syrup or extract of Chelidonium (equivalent of 15 mg of herb qd)
  - Results: The effective rate was ~80%. It was more effective in the simple type than the asthmatic type.
- **Whooping cough:**[576]
  - Design: Uncontrolled clinical trial
  - Patients: 500 children with whooping cough.
  - Therapy: Chelidonium syrup or a decoction of the fresh herb. Infants < 6 months: 5-8 ml; 6-12 mo: 8-10 ml; 1-3 yo: 10-15 ml; 3-6 yo: 5-20 ml; and above 6 yo: 20-30 ml x 8-10 days.
  - Results: 355 cases cured, 116 cases improved.

- **Oncology:**
  - **Pancreatic cancer:**[577]
    - Design: Monocentric controlled randomized clinical trial, phase II
    - Patients: 90 patients with histologically proven unresectable pancreatic cancer.
    - Therapy: 3 groups. A: 1000 mg gemcitabine/m2, B: 20 mg Ukrain (a semi-synthetic thiophosphoric acid compound of alkaloids isolated from Chelidonium majus L); C: 1000 mg gemcitabine/m2 followed by 20 mg Ukrain.
    - Results: Survival rates after 6 months were 26% in group A, 65% in group B, 74% in group C.
  - **Kaposi sarcoma:**[578]
    - Design: Two case reports
    - Patients: AIDS patients with Kaposi's sarcoma
    - Therapy: Ukrain 5 mg iv qod x 10 injections.
    - Results: Kaposi's sarcoma lesions diminished in size, showed decolouration during tx. No lesion appeared in 30-day interval after the beginning of treatment. Immunological status improved: total leukocytes, T-lymphocytes, and T-suppressor numbers increased. One case showed increase in T helper lymphocytes.
  - **Carcinomas**:[579]
    - Design: Two independent clinical trials
    - Patients: 27 patients with various malignancies.
    - Therapy: Ukrain 10 mg iv q3d
    - Results: Increase in both total T-cells and T-helper lymphocytes, a decrease in T-suppressor cells, and normalization of the helper/suppressor ratio. Erythrocyte-rosette-forming T-cells and NK cells also increased. Serum immunoglobulin levels, complement components (C3 and C4), and acute phase proteins were not significantly enhanced. Restoration of cellular immunity was accompanied by an improvement in the patients' performance status and in the clinical course of the disease.
  - **Lung cancer:**[580]
    - Design:
    - Patients: Nine men, 42-68 yo, with histologically proven lung cancer, previously untreated.
    - Therapy: Ukrain 10 mg iv q3d x 10 injections.
    - Results: Increase in the proportion of total T-cells, and a significant decrease in the percentage of T-suppressor cells. There was also a normalization of the H/S ratio. Restoration of cellular immunity was accompanied by an improvement in the clinical course of the disease. The effect was particularly noted in patients who responded to further chemotherapy. Objective tumor regression was seen in 44.4% of treated patients. Four out of nine patients (44.4%) died of progressive disease during the course of this study. It is concluded that Ukrain can be immunologically effective in lung cancer patients and can improve human cellular response.
- **ENT:**
  - **Chronic tonsillitis:**[581]
    - Design: Clinical trial
    - Patients: Childrenwith chronic tonsillitis
    - Therapy: Chelidonium majus L. tincture
    - Results: Tincture improved tonsillar function, cellular and humoral immunity, nonspecific resistance, promoted a reduction in the number of recurrences.

Pharmacy:

Contraindications: Brinker speculates that Chelidonium be avoided in pregnancy due to uterine stimulant activity in animal studies.[582]

Toxicity: Brinker speculates avoiding use of Chelidonium in children due to potential toxicity.[583]

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[558] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001.

[559] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001.

[560] Ibid

[561] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[562] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 315

[563] Felter

[564] Ellingwood p 315

[565] Felter

[566] Scudder J. Specific Medications and Specific Medicines.

[567] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000. p. 338.

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Chenopodium ambrosioides, C. antelminticum

Chenopodiaceae
(Goosefoot Family)

Common name: Wormseed

Habitat: Tropical climates in Americas, esp. Eastern United States

Botanical description: The leaves are toothed & oblong to lanceolate in shape. The small, numerous flowers are yellowish-green in color, grow in small clusters at the axils of the leafy branches. The fruit is subglobular, 2 mm in diameter & is greenish-yellow to brown in color. Upon rubbing the fruit, the pericarp is removed & a single, small, glossy black seed is exposed. The fruit has a strong odor, resembling that of Eucalyptus. The taste is pungent & bitter. Flowering occurs from July – Sept., w/ fruits ripening in the fall & harvested in Oct.

Parts used: Seeds.

Constituents: Oil [ascaridol (an unsaturated terpene peroxide, present up to 70%), geraniol, cymene, terpinene, methyl salicylate, butyric acid], triterpenes, triacontyl alcohol, alpha-spinasterol, nitrates

Medicinal actions: Anthelmintic, Antispasmodic, Vermifuge

Traditional Medicinal Use:
GI Conditions: Chenopodium expels round worms(Ascaris lumbricoides), esp. in children. Chenopodium is benificially antispasmodic, reducing the occurance of gripping that may occur w/ antihelminthic treatment. Chenopodium seed oil has been used to treat hookworm (Ankylostoma uncinaria), tapeworm and whipworm as well as roundworms (Ascaris lumbricoides).[584]

Gyne Conditions: Chenopodium seed oil is beneficial in amenorrhea.[585] Chenopodium is thought to reflexively stimulate the NS and the uterus, & is best used in cases of a depressed pulse & asocc. surface cold. Menstruation can be promoted, esp. after exposure to cold that has resulted in sudden suppression of menses. Chenopodium is often combined w/ twice the amount of A. archangelica to restore menses after exposure to cold.[586]

Current Medicinal use:
Gastrointestinal Conditions: Chenopodium is effective against roundworms (Ascaris lumbricoides – esp. in kids), hookworms (Ankylostoma uncinaria), & small tapeworms. Like other vermifuges, it is most effective when given w/ a purgative to aid expulsion. Chenopodium is less toxic than other vermifuges, & has been used in children, adults & animals.

Current Research Review
- **Gastroenterology**
  - **Parasites:**[587]
    - Design: Ethnopharmacological evaluation and clinical field trials.
    - Patients: Adults with ascariasis
    - Therapy: Decoction of 6000 mg of dried powdered Chenopodium ambrodioides/ kg body weight
    - Results: No significant anthelmintic effect was found on the adults of Necator, Trichuris of Ascaris.

Pharmacy:
Like other vermifuges, it is most effective when given w/ a purgative

Before administering Chenopodium, the patient has a liquid dinner and has no breakfast the following morning.

For children, treatment usually consists of one dose (administered with sugar) of Chenopodium followed in 2 hours with a purgative and carminative. It is wise to administer a carminative (Pimpinella, Foeniculum, etc.) with the purgative in order to ease intestinal colic. After purgation, the patient may eat food. This treatment may be repeated at 10 day intervals for at least 3 cycles.

For adults, the Chenopodium is administered in three smaller doses (i.e. 1-2 ml of tincture) spaced by 2 hours between each dose. Two to three hours after the last dose, a purgative (Castor oil, Mg sulfate, Rhamnus purshiana, Juglans nigra, etc.) is given. Repetition of the procedure at 10 day intervals is important in order to compensate for the lifecycle of the parasite.

Brinker states that repeated use of 1-3 cc of the seed oil in a one-week period is contraindicated.[588]

Powdered seed: 1-4 g
Volatile oil: 5-16 drops (1 ml)
1:5 Tincture: 2-4 m
Fluid extract: 1/4-2 tsp.

Contraindications:

According to Brinker, the seed oil may act as an irritant to the alimentary tract suggesting avoidance in stomach or intestinal disease. He also states that the seed oil acts a cardiac depressant, thus it is contraindicated in heart disease; is hepatotoxic being avoided in hepatic disease; in kidney disease as the seed oil has renal toxic effects. In general, the seed oil should not be used alone in the undernourished or debilitated subjects or in very young children due to its potential toxicity.[589](There appears to be some contradiction here with the findings of other authors. Brinker states that large doses or use in children under four years of age is contraindicated.)

The oil will provoke uterine pain in pregnancy and is contraindicated due to its emmenagogue and abortifacient effects (empirical).[590]

Toxicity:

The toxicity of Chenopodium is lower than other vermifuges which make this plant preferential in the treatment of worms. Burning sensation in throat and mouth, N/V, h/a, tinnitus, drowsiness, sleep, decreased respiration, variable heart rate, gastric ulcer, constipation, prostration, nephritis, decreased blood pressure, spinal cord depression, death by respiratory paralysis. Administer stimulants (i.e. coffee) to induce wakefulness. (Alschuler)

The fresh plant can cause contact dermatitis. (Brinker)

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Chimaphila umbellata

Ericaceae

Common name: Pipsissewa

Habitat:[591] Europe, Asia, Siberia, N. and S. America. Protected species in Germany.

Botanical description: [592]

- Flower and Fruit: Pipsissewa has terminal inflorescences 10 cm long with umbels of 2-7 flowers. Flowers, which are initially bright pink and then white, are nodding and mildly campanulate. The 5 sepals are obovate, dentate, and about a third as long as the 5 petals. The petals are broadly ovate, domed, pink, and 5-6 mm long. The 10 stamens are thickened at the base, edges are winged, and ciliate. The anthers are short, thick, and red. The style is very short and the stigma is broad and shorter then the antehrs. The fruit is a 5-grooved capsule with erect stems.
- Leaves, Stem, and Root: Perennial semi-shrub up to 25 cm high with upright, angular stem and a creeping white rhizome. The evergreen, alternate leaves are short-petioled, coriaceous, ovate-spatulate to linear and wedge-shaped. The leaf margin is sharply serrate.

Parts used:

- Herba, esp. leaves
- Root [593]

Constituents and Pharmacology.[594] (Ubiquitous or non-active constituents not included)

- Arbutin (Leaf): Allelochemic *IC51=1.1 mM*; Antibacterial *MIC=4,000-8,000 ppm*; Antiseptic *60-200 mg/man*; Antistreptococcic *MIC=4,000-8,000 ppm*; Antitussive; Artemicide; Candidicide; Diuretic *60-200 mg/man*; Insulin-Sparing; Mycoplasmistat; Pesticide; Urinary-Antiseptic
- Caffeic acid (Leaf): Aldose-Reductase-Inhibitor *4 ug/ml (weak activity)*; Allergenic; Analgesic; Antiadenoviral; Antiaggregant; Antibacterial; Anticancer; Anticarcinogenic; Antiedemic; Antielastase *IC50=93 um/l*; Antiflu; Antigonadotropic; Antihemolytic *25 uM*; Antihepatoadenomic *200 ppm diet orl mus*; Antihepatotoxic; Antiherpetic *50 ug/ml EC50=>50 ug/ml*; Antihistaminic; AntiHIV *EC50=200 ug/ml*; Antihypercholesterolemic; Antiinflammatory; Antileukotriene; Antimutagenic; Antinitrosaminic; Antiophidic; Antioxidant *1.3 x Vit. E 1/3 quercetin 30 mM 50 um IC57=30 ppm*; Antiperoxidant *IC50=44 uM*; Antiprostaglandin; Antiradicular *1/3 quercetin 10 uM 30 mM*; Antiseptic; Antispasmodic *EC50=3.4-15 uM*; Antistomatitic; Antisunburn; Antithiamin; Antithyroid; Antitumor *200 ppm diet orl mus*; Antitumor-Promoter *IC42=10 uM*; Antiulcerogenic; Antivaccinia; Antiviral *IC50=62.5 ug/ml*; Calcium-Antagonist *IC50=1.2 uM rbt*; Cancer-Preventive; Carcinogenic *2% (diet)*; Cholagogue; Choleretic; Clastogenic; CNS-Active; Co-carcinogenic; Collagen-Sparing; Cytoprotective; Cytotoxic *TC50=200 ug/ml*; Diuretic; DNA-Active; Fungicide *MIC=0.4 mg/ml*; Hepatocarcinogenic *400 ppm diet orl mus (in the absence of alcohol)*; Hepatoprotective; Hepatotropic; Immunostimulant; Insectifuge; Lipoxygenase-Inhibitor *IC27=5 mM IC50=62-148 uM*; Lyase-Inhibitor *IC50=94-164 uM*; Metal-Chelator; Ornithine-Decarboxylase-Inhibitor; Pesticide; Prooxidant; Prostaglandigenic; Sedative *500 mg*; Sunscreen *IC50=2.5 mg/l IC91=5 mg/l IC98=25 mg/l*; Tumorigenic; Vulnerary; Xanthine-Oxidase-Inhibitor *IC50=39.21 um*
- Ericolin (leaf): Antiseptic; Diuretic
- Ferulic acid (leaf): Allelopathic; Analgesic; Antiaggregant; Antiallergic; Antiarrhythmic; Antibacterial; Anticancer (Colon); Anticancer (Forestomach); Anticancer (Liver); Anticancer (Skin); Anticarcinogenic; Antidysmenorrheic; Antiestrogenic; Antihepatotoxic; Antiherpetic; Antiinflammatory; Antimitotic; Antimutagenic; Antineoplastic *(Stomach)*; Antinitrosaminic; Antioxidant *3,000 uM IC51=200 ppm*; Antiserotonin; Antispasmodic; Antithrombic; Antitumor; Antitumor (Colon); Antitumor (Forestomach); Antitumor (Liver); Antitumor (Skin); Antitumor-Promoter *IC46=10 uM*; Antiviral; Arteriodilator; Cancer-Preventive; Candidicide; Cardiac; Cholagogue; Choleretic; Fungicide; Hepatoprotective; Hepatotropic; Herbicide; Hydrocholerectic; Hypolipidemic; Immunostimulant; Insectifuge; Metal-Chelator; Ornithine-Decarboxylase-Inhibitor; Pesticide; Phagocytotic; Preservative; Prostaglandigenic; Prostaglandin-Synthesis-Inhibitor *0.58-3.2 mM*; Sunscreen; Uterosedative *30-100 mg/kg ivn rat*
- Gallic acid (plant): ACE-Inhibitor *IC50=7.7 mM/l*; Analgesic; Antiadenovirus; Antiallergenic; Antianaphylactic; Antiasthmatic; Antibacterial *MIC=1,000 ug/ml*; Antibronchitic; Anticancer; Anticarcinomic *ED50=3*; Antifibrinolytic; Antiflu; Antihepatotoxic; Antiherpetic *EC50=>10 ug/ml*; AntiHIV; Antiinflammatory; Antileishmanic *EC50=4.4 ug/ml*; Antimutagenic; Antinitrosaminic; Antioxidant *7 x quercetin IC44=33 ppm*; Antiperoxidant *IC50=69 uM*; Antipolio; Antiradicular *7 x quercetin*; Antiseptic; Antistaphylococcic *MIC=1,000 ug/ml*; Antitumor; Antitumor-Promoter; Antiviral; Apoptotic; Astringent; Bacteristat; Bronchodilator; Cancer-Preventive; Carcinogenic; Choleretic; Cyclooxygenase-Inhibitor; Floral-Inhibitor; Gram(+)icide; Gram(-)icide; Hemostat; Immunomodulator; Immunostimulant; Immunosuppressant; Insulin-Sparing; Myorelaxant; Nephrotoxic; Styptic; Topoisomerase-I-Inhibitor; Xanthine-Oxidase-Inhibitor
- Gaultherin (leaf): Antiinflammatory; Diuretic

- Methyl salicylate (leaf): *5,445 - 7,920 ppm* Allergenic; Analgesic; Antiinflammatory; Antipyretic; Antiradicular; Antirheumatalgic; Antiseptic; Cancer-Preventive; Carminative; Counterirritant
- P-coumaric acid (leaf): Aldose-Reductase-Inhibitor *4 ug/ml (weak activity)*; Allelopathic; Antibacterial; Antifertility; Antihepatotoxic; Antinitrosaminic; Antioxidant *IC24=30 ppm*; Antiperoxidant *IC50=>100 uM*; Antispasmodic; Antitumor; Cancer-Preventive; Choleretic; Cytotoxic; Diaphoretic?; Fungicide; Lipoxygenase-Inhibitor *IC11=5 mM*; Pesticide; Prostaglandigenic; Prostaglandin-Synthesis-Inhibitor
- P-hydroxy-benzoic acid (Leaf): Antibacterial; Antimutagenic; Antioxidant; Antiradicular; Antisickling *10.5 ug/ml*; Cancer-Preventive; Fungistat *EC50=607 ug/ml*; Immunosuppressant; Pesticide; Phytoalexin; Prostaglandigenic; Secretogogue; Ubiquiot
- Tannic acid (leaf): Aldose-Reductase-Inhibitor *IC50=1.8 ug/ml*; Allergenic; Antianacarditic *(Rhus)*; Antibacterial; Anticariogenic; Anticolitic; Antidecubitic; Antidermatotic; Antidiarrheic; Antidote *For Heavy Metals*; Antidysenteric; Antiencephalitic; Antienteritic; Antifeedant *2-4% diet*; Antigargantitic; Antigingivitic; Antihemorrhoidal; Antiherpetic; AntiHIV *IC90=200 ug/ml*; Antimutagenic; Antinitrosaminic; Antiobesity *(Antinutrient)*; Antiophidic; Antioxidant *IC56=30 ppm*; Antipharyngitic; Antipolio; Antirhinitic; Antiseptic; Antistomatitic; Antitonsilitic; Antiulcer; Antiviral; Astringent; Cytotoxic *15 ug*; Detoxicant; Emetic; FLavor *FEMA 1-1,000*; Hemostat; Hepatotoxic; Immunostimulant
- Vanillic acid (leaf): Aldose-Reductase-Inhibitor *100 uM/l*; Anthelminthic; Antibacterial *1.5-15 mg/ml*; Anticancer; Antifatigue; Antiinflammatory; Antioxidant *IC21=30 ppm*; Antiradicular *7 x quercetin*; Antisickling; Antitumor; Antitumor-Promoter; Ascaricide; Cancer-Preventive; Choleretic; Immunosuppressant;

Medicinal actions: astringent, alterative, tonic, diuretic, antiseptic

Traditional Medicinal uses:

Genitourinary Conditions: Pipsissewa was used as tonic diuretic and alterative, influencing the urinary apparatus in a similar manner to the Buchu and Uva-Ursi. It was thought to relieve irritation of the entire urinary tract and to improve the circulation and nutrition of these organs. Treatment of scrofula and secondary syphilis were other indications.[595] Specifically, it was recommended to use Chimaphila in cases of thick, ropy urine with bloody sediment, itching and pain in the urethra and bladder, in urethritis with profuse and purulent discharge, strangury (painful, interupted urine produced in drops due to a spasmodic contraction of the urethra and bladder), chronic nephritis, and chronic gonorrhea.[596]

Current Medicinal uses:

- Genitourinary Conditions: Urinary tract antiseptic, diuretic, tonic. Most useful in early pyelitis nephritis. Prostitis and inflammation of the cervical lymph glands, urethritis. Has been used for gonorrhea.[597] Chimphila is especially indicated for pelvic congestion manifested in the urinary system as scanty urine or thick, mucopurulent and/or bloody urine, with burning on urination and general weakness. The arbutin in Chimiphila lends antimicrobial activity to the plant. Arbutin is most active when the pH of the urine is alkaline (See Arctostaphylos for more on arbutin. Compared to Arctostaphylos, a key arbutin containing botanical, Chimaphila does not have tannins, which may differentiate the use between these two herbs). Chimaphila can be used for any infection in the urinary system: cystitis, pyelonephritis, and prostatitis. It is best combined with other antimicrobial and demulcent herbs for infections of the urinary system. Chimaphila can also be used for long-term support of kidney and bladder function when there is weakness manifested as scanty urine, urinary incontinence, albuminuria, glucosuria, or low-grade pelvic pain. One physician has claimed that it will reduce the mammary glands or testicles if taken too long.[598]
- Musculoskeletal Conditions: Root can be used as anti-rheumatic via improvement of kidney function.[599]
- [Gastrointestinal Conditions: Digestive and hepatic tonic. Chimaphila is indicated in the latter stages of typhoid fever with deficient excretion.
- Lymphatic Conditions: Chimaphila is also classified as a lymphatic and tends to promote decongestion of lymphatic tissues. Its use has been employed when the lymph nodes of the abdomen are filled as in diarrhea or cholera. Cervical lymphadenopathy may also respond well to Chimaphila as in buboes or scrofula where the fresh plant tincture can be applied topically and internally. Edema from any cause is an indication for its use. Chimaphila has been used for enlarged parotid glands.
- Dermatological Conditions: Chimaphila also removes lesions of the skin, particularly the glands, caused by the presence of waste products resulting from defective catabolism. The fresh plant tincture can be applied topically and internally.
- Gynecological Conditions: Chimaphila may be utilized in leucorrhea with copious mucous secretion and mastitis and as an adjunct in the treatment of breast cancer.][600]

Current Research Review:

- Search of Medline revealed no human trials as of 1/15/03

Pharmacy:

- Tincture:[601]

- Unspecified strength, from root, anti-rheumatic effect: 10-20 qtts QID
- Unspecified strength, from root, genito-urinary agent: 5-30 qtts QID in large glass of water.
- Unspecified strength, from whole plant, glandular effect: 3-20 qtts

Drug interactions: none known.[602]

Contraindications: none known.[603]

Toxicity/side effects:

- The fresh leaves can cause contact dermatitis.[604]
- Orally, chronic use may lead to hydroquinone toxicity. Symptoms of toxicity include tinnitus, vomiting, delirium, convulsions, and collapse.[605]

[591] *PDR for Herbal Medicines*, 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p.595

[592] Ibid.

[593] W. Mitchell, *Naturopathic Applications of the Botanical Remedies*, 2nd ed., 1983, p.13.

[594] James A. Duke, "Chemicals and Their Biological Activities in: Chimaphila umbellata," *Dr. Duke's Phytochemical and Ethnobotanical Databases*, <http://www.ars-grin.gov/duke/index.html>.

[595] John M. Scudder, *Specific Medication and Specific Medicines*, 15th ed, Eclectic Medical Publications, Sandy, OR, 1903, p. 109.

[596] Finley Ellingwood, *American Materia Medica, Therapeutic and Pharmacognosy*. Ellingwood's Therapeutist, Chicago, 1919, pp. 377-8.

[597] W. Mitchell, *Naturopathic Applications of the Botanical Remedies*, 2nd ed., 1983, p.13.

[598] Reference not found

[599] Mitchell, pp. 36, 41.

[600] Reference not found

[601] Mitchell, pp. 13, 36, 41

[602] "Monograph: Pipsissewa," Natural Medicine Database, April 19, 2002, <http://www.naturaldatabase.com/monograph.asp?mono_id=102&hilite=1>, April 21, 2002.

[603] Ibid

[604] Francis Brinker, *Herb Contraindications and Drug Interactions*, 2nd ed., Eclectic Medical Publications, Sandy, Oregon, 1998, p. 149.

[605] A. Y. Leung, S. Foster, *Encyclopedia of Common Natural Ingredients Used in Food, Drugs and Cosmetics*, 2nd ed., John Wiley & Sons, New York, 1996, cited in "Monograph: Pipsissewa," Natural Medicine Database, April 19, 2002, <http://www.naturaldatabase.com/monograph.asp?mono_id=102&hilite=1>, April 21, 2002.

Chionanthus virginicus — Oleaceae

Common name: Fringe tree

Habitat: This is a small tree that grows in the S.E. part of the U.S.

Botanical description: The tree bears white flowers and has large leaves. The root bark is found in irregular, quilled dull-brown pieces.

Historical uses: It was used by turn of the century medical practitioners in the treatment of typhoid fever and malaria.

Parts used: Root bark

Constituents: Largely unknown; chionanthin (hemolytic saponin glycoside), phyllyrin (lignin glycoside)

Pharmacology: Not specifically known. In general, cholagogues stimulate the flow of bile into the small intestine whereas choleretics increase the production of bile by the liver.

Medicinal actions: Alterative, choleretic, cholagogue, diuretic, tonic, antiemetic, laxative.

Traditional Medicinal Use:

Specific Indications and Uses.—Dirty, sallow skin, with expressionless eyes and hepatic tenderness; an icteric hue, with or without pain; hepatic colic; intense pain from liver to umbilicus, attended with nausea and vomiting and great prostration; pain in epigastrium and right hypochondrium, simulating colic, sometimes extending to the abdomen; jaundice, with itching skin and thin, light-colored, watery stools; tympanites; colic, with green alvine discharges; urine stains the clothing yellow.[606]

Other specific indications were hepatic congestion, jaundice, RUQ pain or soreness, pain in the epigastrium; pain radiating from the navel over the abdomen; nausea, vomiting, constipation with dry feces, slight fever.

- Gastrointestinal Conditions: Chionanthus was regarded to improve the appetite, aid digestion, promote assimilation, and exert a tonic effect on the whole system. In dyspepsia, with hepatic complications, irritative states of the stomach from rich foods and in general chronic inflammatory conditions of the duodenum and common bile duct, Chionanthus served a useful purpose. It is also a good remedy in infantile dyspepsia and also in pancreatic disease, inflammatory or otherwise. [607]
- Hepatobiliary Conditions: Chionanthus was considered to principally act upon the abdominal glandular organs, and to some extent upon the venous system, relieving congestion. It was considered to promote all glandular secretions slowly, but especially those of the liver, gall-ducts, and kidneys.[608]
  A strong indication is in acute congestion of the liver with deficient bile secretion, particularly if jaundice is present. Hypertrophy of the liver, chronic hepatic inflammation, and portal congestion are speedily relieved by Chionanthus. The remedy acts quickly, often removing in from 1 to 2 weeks, an icteric hue that has existed for months, and even years.
  According to King, "If there is any one thing true in specific medicine, it is that Chionanthus has a decidedly specific action in jaundice."[609] It was considered the best remedy for all cases of jaundice, although debate occurred as to whether or not it was indicated when gall stones were present: Scudder said it was, King said it was not and Cook did not comment.
  Chronic splenitis and nephritis are conditions in which fringe-tree often proved a good remedy. Chionanthus was used historically to treat malaria because it stimulates the activity of both the liver and the spleen.
- Gynecologic Conditions: Chionanthus was utilized in uterine and ovarian congestion, when the usual hepatic symptoms calling for it were present. Occasionally, Chionanthus was used for uterine leucorrhoea.
- Topical Applications: As a poultice it will be found an excellent local application in external inflammations, ulcers, and wounds.

Current Medicinal use:

- Endocrine Conditions: Chionanthus stimulates all glandular tissue to some extent. For this reason, Chionanthus is helpful in the treatment of type II diabetes and hyperglycemia through its hepatic and pancreatic stimulation. In this regard, Chionanthus may be used long-term as preventative for diabetes and diabetic complications.
- Hepatobiliary Conditions: Chionanthus is a very useful herb for all types of liver and gall-bladder complaints. It is especially indicated in inflammation of the gall-bladder and gall stone gravel as it stimulates the release of bile. Through its cholagogue action, it prevents the formation of calculi, and expulsion of formed stones. This action also lends it an aperient effect.
  Chionanthus is also well-indicated in congestive states of the liver, especially in overt jaundice. Chionanthus can be used to effectively treat neonatal jaundice and other jaundices in children.
  Chionanthus is most indicated in states of hepatic congestion with partial obstruction (due to hepatic inflammation and/or gall stones), excess mucous, and impaired hepatic functioning (i.e. impaired metabolism of urea with resultant increase in uric acid excretion and consequent joint disease, impaired production of bile).

Current Research Review:

- Search of Medline revealed no human trials as of November 2002.

Pharmacy: Infusion: 1-2 tsp bark/cup water; sig 1 cup TID
Tincture 1:5 25% EtOH; sig 1-2 ml TID

Contraindications: Chionanthus should not be used in cases of impacted stones, malignant growths or other obstructions of the bile duct.[610,611]

Toxicity: Ptyalism (excessive salivation) has resulted from its use.

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[606] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[607] Felter

[608] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985 p.

[609] Felter

[610] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 314

[611] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 74

Cimicifuga racemosa (Macrotys racemosa, Actaea racemosa) Ranunculaceae

Common name: Black cohosh, black snakeroot, rattle snake root, bugbane, Macrotys, western bug bane, tall bugbane, rattleroot, rattleweed, squawroot, , rich weed

Habitat: Cimicifuga grows on hillsides and in woods at higher elevations from Maine through Ontario to Wisconsin at the north and to Georgia through Missouri in the South.

Botanical description: A perennial herbaceous plant, with a smooth stem growing to a height of 2-4 ft. The leaves are tripartate with oblong leaflet that are incisely serrated. Flowers are white in long slender racemes, with many stamens, and a disagreeable odor. The fruits are ovate capsules containing many flat seeds.

Part Used: Root and rhizome (dried)

Historical Use: Native Americans used Cimicifuga for relief of pain during menses and childbirth and against snake bites.

Constituents:

- Triterpene glycosides/ saponins: actein, cimifugoside, 27-deoxyacetin, cimigenol, cimicifugin = macrotin, racemoside
- isoflavones (formononetin)*
- other: isoferulic acid, caffeic acid, ranunculin (yielding anemonin), volatile oil*, tannin, estrogenic principle, alkaloids, salicylates*, resin (cimicifugin), flavonoids

Pharmacology:

Adapted from Mills and Bone:

In animal studies, injections have increased the weight of the uterus, established menstrual cycles in juvenile and climacteric animals.[612] It has demonstrated selective reduction of serum LH in ovariectomized rats.[613] At least two groups of compounds appear to be responsible for this endocrine activity.[614] One of which the isoflavone formononetin, which has been suggested to be an estradiol competitive antagonist by binding to estrogen receptors but not activating them; therefore, formononetin does not appear to affect LH secretion.[615] The LH suppressive effect appears to be caused by synergistically acting compounds that are not water soluble.[616]

Unlike estradiol, Cimicifuga extract did not stimulate in vitro growth of mammary tumor cells and strongly inhibited proliferation at a 2.5 μg/ml, particularly with tamoxifen: the effect was greater than either substance used alone.[617,618]

Cimicifugoside inhibits lymphocyte blastogenesis, has an immunosuppressive activity on B cells function, and may inhibit T cell function at higher doses.[619] In turn, an in vivo study demonstrated that when combined with tamoxifen, the antiproliferative effect of tamoxifen was enhanced.

According to the Textbook of Natural Medicine:[620]

The action of Cimicifuga appears to mimic estriol more closely than estradiol. In clinical studies of menopausal women, the action of Cimicifuga extract was primarily on the vaginal lining, similar to estriol, rather than the uterine lining like estradiol. Estriol also occupies receptors for shorter times than estradiol, which may explain the receptor activity of Cimicifuga.

The main effect of Cimicifuga is likely attributable to the synergism of the triterpenes and flavone derivatives and another unidentified constituent. These compounds are believed to affect the hypothalamus and vasomotor centers resulting in decreased LH secretion and relief of associated menopausal symptoms. In addition, not all of the suspected active constituents bind to estrogen receptor sites. Cimicifuga does not affect of the release of FSH or prolactin.

According to Dr. Powell: There is an extensive literature derived from both experimental and clinical studies demonstrating estrogen effects for *Cimicifuga.*[621] Pharmacological studies have shown that alcoholic extracts of *Cimicifuga* bind to estrogen sites *in vitro.* Documented estrogenic effects of *Cimicifuga* have been found associated with at least three synergistically acting constituents and *Cimicifuga* has been found to suppress hot flashes and lower LH, but not FSH levels.[622] A reduction in LH may cause a resulting reduction in progesterone. Studies have found that post-hysterectomy patients show an estrogen-like stimulation of the vaginal mucosa and symptomatically respond as well to treatment with *Cimicifuga* as to treatment with various estrogens.[623,624,625] *Cimicifuga* has hypotensive effects and has been found to cause peripheral vasodilatation in humans.[626,627]

According to Dr. Low Dog: Cimicfuga is not estrogenic and is likely not a SERM. The Chinese varieties have the effect of a SSRI. Some research suggests that SSRIs may help with menopausal Sx. Cimicifuga is antiinflammatory

Medicinal Actions: anti-spasmodic*, estrogenic, sedative, diuretic, emmenagogue, anti-rheumatic, uterine tonic, anti-inflammatory, antitussive, expectorant, hypotensive, LH antagonist, peripheral vasodilator, synergist

Medicinal use:

Cimicifuga is used in three systems: musculo-skeletal, respiratory, and female reproductive. The isoferulic acid lowers body temperature, thus this herb is cooling.

- Gynecologic Conditions: The anti-spasmodic and analgesic actions on the female reproductive system make it useful for treating spasmodic dysmenorrhea or any spasm or tension of the female organs. Cimicifuga (phytoestrogen) combines well with Vitex agnus castus (pituitary balancer which increases progesterone) as a balancing formula for the female reproductive system. It combines well with Chamaelirium luteum in cases of amenorrhea and dysmenorrhea with a dragging sensation in the pelvis. Cimicifuga increases blood supply to the pelvis and while it is anti-spasmodic, primarily exerts a tonifying influence. Cimicifuga is especially indicated in atony of the reproductive tract, i.e. infertility secondary to disordered action and lack of tone in the reproductive organs.

Cimicifuga is a good partus preparator if given for several weeks before labor. It is useful in labor when the uterus is contracting weakly and irregularly yet there is excessive irritability of the uterine mm. Cimicifuga will help to sedate the uterus, will soften the birth canal and will aid in creating efficient uterine contractions.

Cimicifuga has been researched and utilized extensively in the management of menopausal symptoms. A standardized extract called Remifemin™ manufactured in Germany is used as a replacement or adjunct for hormone replacement therapy. In a placebo controlled trial of 110 menopausal women with climacteric hot flushes, Remifemin™ demonstrated effectiveness at relieving hot flashes.[628] The incidence of hot flushes is correlated with increasing LH levels, which increase with the ovarian insufficiency that occurs in menopause. Other clinical studies comparing Remifemin™ to estrogen and placebo show that Remifemin™ has a superior ability to reduce menopausal symptoms and is without clinical side effects. However, recent investigation has failed to find phytoestrogenic activity in Remifemin™.[629] It has been postulated that the standardization process may remove the phytoestrogenic compounds.

- Pulmonary Conditions: It is anti-spasmodic, thus in the respiratory system it is useful in relaxing spasms of bronchial smooth mm. as in the treatment of asthma (acute and chronic) or any paroxysmal condition of the respiratory tract. Cimicifuga will allay a spasmodic, reflexive cough by increasing bronchial secretions and sedating the nervous influence on the bronchial smooth muscle.
- Musculoskeletal Conditions: The anti-spasmodic actions along with the analgesic action (salicylates?) make it anti-rheumatic. Cimicifuga is ideal for overstrained muscles with dull aching pain(and rising temp. i.e. the beginning stages of a flu).
- Cardiovascular Conditions: Cimicifuga has been approved by the Russians an "official" treatment for high blood pressure due to its vasodilating action. Cimicifuga is also a specific for auditory tinnitus (most likely secondary to HTN).
- Male Conditions: Cimicifuga is indicated in inflammatory conditions of male reproductive organs soothing the nervous irritability and pain (i.e. orchitis, prostatitis) and assisting in the discharge of inflammatory products.

According to Dr. Powell:

Cimicifuga was commonly used by native Americans to relieve pain during childbirth and for treating dysmenorrhea and symptoms of menopausal syndrome. Eclectic physicians used *Cimicifuga* as "an ideal regulator of uterine contractions during labor." Early Americans learned to use *Cimicifuga* for menopausal vasomotor instability. *Cimicifuga* was an ingredient in the famous Lydia E. Pinkham's Vegetable Compound. A 1995 trial of *Cimicifuga racemosa* and *Hypericum perforatum* was found to be 78% effective in treating menopausal syndrome including hot flashes, headache, heart palpitations, irritability, and perimenopausal depression. *Cimicifuga* is commonly used in some European countries as an alternative to hormone replacement therapy (HRT). The efficacy of *Cimicifuga* in preventing osteoporosis has not been adequately studied.

Cimicifuga racemosa has estrogenic effects that are relatively slow in appearing and it is observed that it is about one month before the full effects of *Cimicifuga* is established. It has been used to treat infertility with decreased estrogen. *Cimicifuga* is also found particularly useful for women with nonspecific pelvic pain and endometriosis. It has been found useful in treating spastic dysmenorrhea, secondary amenorrhea, and hypomenorrhea associated with low estrogen and high progesterone levels, particularly in young women. It has been used to treat epilepsy, particularly when frequency of seizures increases premenstrually.

Cimicifuga has an anti-inflammatory action that is useful in the treatment of fibromyalgia. It acts to reduce muscle soreness, heaviness, and stiffness. It was frequently used for "lumbago and rheumatism" by eclectic physicians. It is a particularly effective in the treatment of fibromyalgia that accompanies the peri menopause and hypoovarianism. *Cimicifuga* has been used to treat degenerative and inflammatory arthritis, neuralgia, sciatica, and headaches that occur perimenopausally.

Cimicifuga has been found useful in treating hypertension. *Cimicifuga* is a peripheral vasodilator, opposing the constricting effect of epinephrine on the circulatory system. It is found to be helpful in treating high blood pressure that is aggravated by, or associated with stress. The anti-stress effects of *Cimicifuga* are also extend to its sedative and antispasmodic effects. It has been used to treat the detrimental effects caused by the chronic activation of the alarm stage of the Maladaptive Stress Syndrome (MSS-1).

Cimicifuga *is known as a synergist, a botanical medicine that combines well with other botanicals. The synergy is found to produce a beneficial therapeutic effect that is greater than the therapeutic effect of the isolated botanicals. It is known to combine particularly well with* Va/eriana *spp*

According to Scudder

the specific indications for Cimicifuga are heavy, tensive, dull, aching pain as if d/t a contracted state of the muscular fibers; soreness of muscular tissues.

According to Mills and Bone:[630]

- Gynecologic Conditions: Cimicifuga is used in the treatment of climacteric symptoms and conditions arising from ovarian insufficiency. As an adjunct, it may be used in the treatment of conditions requiring reduction in LH levels such as miscarriage, cyst formation, infertility, ovarian tumorigenesis or polycystic ovary syndrome.

In regard to menopause, women appear to respond well if premenopausal, perimenopausal or with post-operative climacteric symptoms with or without intact ovaries. Women with symptoms of depression, short-term memory loss and tinnitus respond well.

Another study demonstrated improvement after four weeks of the standardized extract with similar improvement in nervousness, sleeplessness and depression. In women who had undergone hysterectomy with at least one intact ovary and climacteric symptoms Cimicifuga appears to be as effective as estriol and conjugated estrogens. Similarly, it has been shown at least as effective as conjugated estrogens in stimulation of the vaginal mucosa, improvement in the vaginal cytological indices and associated skin and hair problems. It was also more effective than diazepam for vegetative and psychological alterations.

For dysmenorrhea, Cimicifuga is an anti-inflammatory and hormonal herb that is indicated and can by combined with Corydalis.

- Inflammatory Conditions: Plants rich in phytosterols have been traditionally used for treatment of inflammatory conditions. Cimicifuga has been used in the treatment of various types of arthritis although the research in this use is inconclusive.

According to the Textbook of Natural Medicine:[631]

- Gynecologic Conditions: According to clinical trials, Cimicifuga standardized extract not only relieves hot flashes, but depression and vaginal atrophy associated with menopause. Numerous clinical trials have demonstrated these effects. In regard to bone resorption, experimental and epidemiological evidence suggests that phytoestrogens reduce bone resorption and prevent osteoporosis. Long-term evaluation of this effect is indicated. For postmenopausal patients, bone mineralization can be monitored used the Osteomark-NTX or DEXA scan.

Cimicifuga may also be beneficial in the treatment of menstrual disorders such as premenstrual syndrome, primary and secondary amenorrhea, dysmenorrhea, polymenorrhea, uterine fibroids.

Cimicifuga is a natural alternative to HRT when the latter is contraindicated as in : women with a history of cancer, unexplained uterine bleeding, liver and gall bladder disease, pancreatitis, endometriosis, uterine fibroids or fibrocystic breast disease. Cimicifuga may even demonstrate inhibitory effects as demonstrated in breast tumor cell lines. Combination with Tamoxifen demonstrated the poteniation of the drug.

According to Weiss:[632]

- Gynecologic Conditions: Cimicifuga is indicated specifically for conditions due to underlying estrogen deficiency including climacteric complaints and problems arising during pregnancy and in puberty.

Cimicifuga has a specific indication for spastic parametropathy. The way in which the menopausal syndrome responds to Cimicifuga demonstrates the similarity of application for spastic parametropathy in young women, particularly where the psychovegetative component is concerned.

In regard to menopause this plant exerts a positive effect particularly on the vegetative dysregulation and mental symptoms. It is particularly effective in treatment of climacteric depression.

According to King:[633]

Specific Indications and Uses.—Dr. Scudder gives as the specific indications for this drug: "Muscular pains; uterine pains, with tenderness; false pains; irregular pains; rheumatism of the uterus; dysmenorrhea. As an antirheumatic, when the pulse is open, the pain paroxysmal, the skin not dry and constricted." To these may be added a sense of soreness, with dragging pains in the hips and loins; rheumatoid muscular pain; rheumatoid dyspepsia; chorea, associated with "absentio mensium."

- Musculoskeletal Conditions: Few of our remedies have acquired as great a reputation in the treatment of rheumatism and neuralgia. As early as 1844, in the New York Philosophical Journal, Dr. King recommended the use of a saturated tincture of Cimicifuga in acute rheumatism, stating that the remedy would permanently cure the disease. Prof. King's own statement of his use of it is as follows: "The saturated tincture of this article was recommended by me in acute rheumatism, in the New York Philosophical Journal, as early as in the year 1844; to be given in doses of 10 drops every 2 hours, gradually increasing to 60 drops, or until its action on the brain is observed, which action must be kept up for several days; it almost always removes the disease permanently, especially if it is a first attack." The experiences of other physicians since that day give abundant evidence of the truth of his statement. Indeed, few cases of rheumatism, or conditions depending upon a rheumatic basis, will present, which will not be influenced for the better by Macrotys. Rheumatism of the heart, diaphragm, psoas muscles, "lumbago," "stiff neck," in fact all cases characterized by that kind of pain known as "rheumatic," dull, tensive, intermittent, as if dependent upon a contracted state of muscular fibre, soreness in muscular tissue, especially over the abdomen and in the extensor and flexor muscles of the extremities, all yield readily to it. If there be febrile and inflammatory conditions it should be associated with specific aconite, or specific Veratrum; or possibly specific Asclepius will be indicated. If the pain be greatly aggravated by motion, and especially if the serous tissues be involved, specific Bryonia should be added to it. Should there be burning pain, aggravated by warmth of the bed, specific Rhus. If effusion of serum into cellular structures be present, combine the Macrotys with specific Apocynum.

Muscular pain of a rheumatoid character, when not amounting to a true rheumatic attack, and other rheumatoid pains, when acute and not of spinal origin, such as gastralgia, enteralgia, tenesmic vesical pain, pleurodynia, pain in the mediastina, orbits or ears, are relieved by Cimicifuga.

- Nervous Conditions: Macrotys exerts a powerful influence over the nervous system, and has long been favorably known as a remedy for chorea. It may be used alone or with specific Valerian, equal parts. It is particularly useful here when associated with amenorrhea, or when the menstrual function fails to act for the first time. Its action is slow, but its effects are permanent. It has been used successfully as an antispasmodic in hysteria, epilepsy when due to menstrual failures, asthma and kindred affections, periodical convulsions, nervous excitability, pertussis, delirium tremens, and many other spasmodic affections. For headache, whether congestive or from cold, neuralgia, dysmenorrhea, or from la grippe, it is promptly curative.
- Gastrointestinal Conditions: In small doses the appetite and digestion are improved, and larger amounts augment the secretions of

the gastro-intestinal tract. Cimicifuga is a remedy for dyspeptic manifestations when due to rheumatoid states of the gastro-intestinal tube, or when associated with rheumatism of other parts of the body. It should be remembered in those cases where there is a dull or aching pain and tendency to metastasis, made worse by taking food or drink, and when the walls of the stomach seem to be contracting upon a hard lump, the patient having a rheumatic tendency or history (Webster).

- Genitourinary Conditions: Excretions from the skin and kidneys are increased by it, the peculiar earthy odor of the drug being imparted to the urine;
- Pulmonary Conditions: The secretions of the bronchial mucous surfaces are also augmented under its administration. AS a palliative agent in phthisis (wasting) pulmonalis, good results are obtained, in that it lessens cough, soothes the pain, especially the "aching" under the scapulae, lessens secretions and allays nervous irritability.
- Cardiovascular Conditions: Upon the heart and circulatory system its effects have been compared to those of digitalis, though being much less pronounced. The heart-beat is slowed and given increased power by it, while arterial tension is elevated. In cardiac rheumatism it should be given early and in quite full doses, withdrawing the remedy when the full and dull headache is produced by the drug. In this way confirmed rheumatism of that organ may often be averted. It is most useful in acute cases, being of value only to relieve the acute complications that may arise in chronic cardiac rheumatism.
- Gynecologic Conditions: Upon the reproductive organs it exerts a specific influence, promoting the menstrual discharge, and by its power of increasing contractility of the unstriped fibres of the uterus, it acts as an efficient parturient. Macrotys plays a very important part in the therapeutics of gynecology. It is a remedy for atony of the reproductive tract. In the painful conditions incident to imperfect menstruation. its remedial action is fully displayed. By its special affinity for the female reproductive organs, it is an efficient agent for the restoration of suppressed menses. It is even a better remedy in that variety of amenorrhea termed "absentio mensium." In dysmenorrhea it is surpassed by no other drug, being of greatest utility in irritative and congestive conditions of the uterus and appendages, characterized by tensive, dragging pains, resembling the pains of rheumatism. If the patient be despondent and chilly, combine Macrotys with specific pulsatilla, especially in anemic subjects. In the opposite condition associate it with gelsemium. It is a good remedy for the reflex "side-aches" of the unmarried woman; also for mastitis and mastodynia. It should be remembered in rheumatism of the uterus, and in uterine leucorrhoea, with a flabby condition of the viscus, its effects are decided. When there is a disordered action or lack of functional power in the uterus, giving rise to sterility, Cimicifuga often corrects the impaired condition and cures. Reflex mammary pains during gestation are met by it, and in rheumatic subjects it promptly relieves such ovarian troubles as ovarialgia and neuralgia, the pain being of an aching character.

Macrotys has proved a better agent in obstetrical practice than ergot. It produces natural intermittent uterine contractions, whereas ergot produces constant contractions, thereby endangering the life of the child, or rupture of the uterus. Where the pains are inefficient, feeble, or irregular, Macrotys will stimulate to normal action. It is an excellent "partus preparator" if given for several weeks before confinement. It is a diagnostic agent to differentiate between spurious and true labor plains, the latter being increased, while the formers are dissipated under its use. It is the best and safest agent known for the relief of after-pains, and is effectual in allaying the general excitement of the nervous system after labor.

As a partus accelerator, it may be substituted for, and should be preferred to, ergot; 1/2 drachm of the powdered root may be given in warm water every 15 or 20 minutes, until the expulsive action of the uterus is induced, and which it seldom fails to bring on speedily and powerfully. The powder, however, is seldom now used, the specific Macrotys in from 15 drops to 1/2 fluid drachm being given in the same manner. In acute troubles, as acute muscular rheumatism, and in false pains, and as an oxytocic, Webster prefers the strong decoction of the recent root in tablespoonful doses.

- Male Conditions: The venereal propensity in man is said to be stimulated by Cimicifuga. Orchialgia and aching sensations of the prostate are conditions calling for Macrotys, and as a tonic it is not without good effects in spermatorrhea.
- Inflammatory Conditions: Fevers, intermittent and remittent have been benefited by it, well-marked antiperiodic and tonic virtues having been observed in the drug. For rheumatic fever we have no better agent, when combined with aconite or veratrum. In the cerebral complications of the simple and eruptive fevers, especially in children, its action is prompt and decisive. It uniformly lessens the force and frequency of the pulse, soothes pain, allays irritability, and lessens the disposition to cerebral irritation and congestion. In febrile diseases especially, it frequently produces diaphoresis and diuresis.

In the exanthemata, it is a valuable agent, controlling pain, especially the terrible "bone aches" of smallpox, rendering the disease much milder. In scarlatina and measles, it relieves the headache and the backache preceding the eruptions. It is stated that it has been used in the South with some success as a prophylactic against variola. Cimicifuga exerts a tonic influence over both the serous and mucous tissues of the system, and will be found a superior remedy in the majority of chronic diseases of these parts. In all cases where a acidity of the stomach is present, this should first be removed, or some mild alkaline preparation be administered in conjunction with the remedy, before any beneficial change will ensue. As a remedy for pain, Macrotys is a very prompt agent, often relieving in a few hours, painful conditions that have existed for a long time.

According to Cook:[634]

It is moderately prompt and diffusive, but requires hours to manifest its full action through the system. It is almost purely relaxant, leaving behind only a trifling astringent impression on mucous membranes. It leaves behind a gently toned impression, rather than a relaxed one. It soothes and strengthens.

Its power is expended chiefly upon the nervous structures beginning at the peripheries and extending to the brain, including the ganglionic system; through the sensory nerves influencing the heart and pulse and through the sympathetic nerves making a decided

impression upon the uterus. It quiets mental excitement and calms both body and mind, disposing to a placid sleep with a sense of relief about the head. At the same time it softens and slows the pulse and causes fullness of the capillary circulation and a gentle increase of perspiration.

It manifests a distinct action upon the whole class of serous tissues and a milder action on the kidneys, lung and skin. Upon this range of organs its impression is always relaxant; and that relaxation is not the same in kind as from Lobelia, Boneset, Chamomile or any other agent, but is peculiar to this article alone.

On serous tissues it allays irritation, soothes excitement and relieves sub-acute and chronic inflammation.

- Nervous Conditions: On the nerves it acts gradually but effectively, relieving pain dependent on local irritation and proving a good antispasmodic. Its soothing effect proves of service in general nervous excitement and agitation as in periodic convulsions, whether of hysteria, epilepsy, puerperal convulsions or mania, neuralgia and irritation of the meninges such as cerebral and cerebro-spinal meningitis. For meningitis it is used in treatment and convalescence as a primary remedy. Extending its importance to the very brain it is of importance in delirium tremens and chorea as is not compared by any other remedy.

  Other indications for it have been claimed to include as a diaphoretic and antiperiodic in gastric intermittents as well as to increase the flow of urine a little and relieves the kidneys somewhat. Although much reliance should not be placed on it in these connections, the action on the nervous system may render it a good adjuvant in certain forms of all of these maladies.
- Pulmonary Conditions: It is soothing to the nervous excitement associated with whooping-cough and spasmodic asthma. It has been used in the treatment of tuberculosis (consumption) as a valuable agent to soothe the cough and impart tone to the lungs
- Musculoskeletal Conditions: It is used for great relief in all forms of articular and neuralgic rheumatism for which it is one of the most useful agents.
- Gynecologic Conditions: Its action on the uterus is well marked, relieving neuralgia and rheumatism of this organ, proving efficient in painful menstruation accompanied by tardiness. It will distinctly increase the menstrual flow.

  It decidedly and powerfully expedites delivery when the uterine action becomes weary and irritable. It is relaxing to a rigid os and an irritable vagina becomes moist and less sensitive. Labor pains become more regular and effective. A small portion combined with Trillium and Cypripedium is useful for after pains and to maintain the lochia.

  It is also suitable for ovarian irritation.

Pharmacy: Cimicifuga may be taken long term although the German Commission E recommends use to be limited to six months. This is the same recommendation for conventional HRT and was make prior to the most current toxicology information. Studies have demonstrated benefits with treatment lasting from 4-12 weeks.

Cook states that Cimicifuga should usually be in less quantity than the associated agents in a formula. He further describes the ease with which it may be given in too large a quantity and at too short an interval.

King states that the saturated tincture of the root is recommended as a valuable embrocation in all cases where a stimulant, tonic, anodyne, and alterative combined are required. The specific Macrotys will be preferable to the saturated tincture. The local use of the drug, however, is not extensive. In phthisis (wasting) pulmonalis, cough, acute rheumatism, neuralgia, scrofula, phlegmasia dolens, amenorrhea, dysmenorrhea, leucorrhoea, and other uterine affections, the alcoholic preparations, as the saturated tincture or the specific Macrotys, are the best modes of exhibition, and exert a therapeutic influence not to be obtained from the impure resin, termed cimicifugin.

Preparations of Cimicifuga, to be of any medicinal value, must be prepared from recently dried roots. (Cook and King)

Powdered root: 0.5-1 g 3-4 x day (British Pharmaceutical Codex); 5-10 grains q 4-6 hours (Cook)

Infusion: 4 drams powdered herb in 8 oz tepid water, steep 30 min. in a covered container. Sig 2-4 drams q 2-3 hours. During parturition or a rheumatic attack sig2 drams q hour. (Cook)

Decoction: 2-3 gm./pint water; sig 1 cup TID (Alschuler) Cook claims that the use of boiling water damages it greatly, therefore nothing hotter than lukewarm water should be used to decoct this herb.

Tincture:

1:5, sig 3.5-7 ml qd (Mills and Bone)

1:10 60% alcohol, sig 2-4 ml TID (British Herbal Compendium, vol. 1)

1:10, sig 6-12 ml qd (British Pharmaceutical Codex)

4 oz. bruised root, 16 oz alcohol. Macerate for 10 days, express and filter. This form is best suited for impression on the brain and the throat as well as whooping cough, asthma and other spasmodic bronchial affections, chronic rheumatism and dropsy. Sig 15 gtt to ½ dram q 2-3 hr; 20 gtt is an excellent parturient.

Specific Tincture: a teaspoonful of a mixture of from 10 drops to 1 drachm of specific Macrotys in 4 ounces of water, the larger or smaller dose being determined by the condition of the patient.

Fluid Extract

1:1 90% alcohol, sig 1 ml TID (Dr. Alschuler); 3-4 ml qd (Dr. Murray)

1:2 , sig 2 ml TID (Dr. Alschuler, Mills and Bone)

1/2 fluid drachm to 2 fluid drachms (King)

Solid Extract: 4:1, 250-500 mg qd (Dr. Murray)

Standardized extract: (Remifemin™)40 drops BID or 2 tablets BID (24.8-42.7 mg dried herb standardized to triterpene

glycosides: 27-deoxyactein, 1mg per tablet). Other proprietary preparations are Cimicifuga-Oligoplex (Madaus) and Cimicifuga Pentakran (DHU).

Syrup: 8 oz. tincture added to 12 oz. simple syrup, evaporate to a pint. Use for coughs and other pectoral affections. Add 1oz of Lobelia tincture makes a superior expectorant and antispasmodic preparation for dry coughs, difficult breathing, irritable contractions of the diaphragm, etc. (Cook)

For spastic parametropathy, Weiss indicates that administration should be consistent over an extended period in accord with the chronic and intermittent nature of this condition.

In diseases of the ear the drug is indicated when the condition is aggravated by rheumatic association, or in neuralgia of the parts with stiffness in the faucial and pharyngeal muscles. The dose should be about 1/4 to 1/2 drop of specific Macrotys every 2 hours. In eye strain, giving rise to headache, and associated with a sensation of stiffness in the ocular muscles, or a bruised feeling in the muscles of the frontal region, the same sized doses will give marked benefit. In doses of 1 fluid drachm of the tincture, repeated every hour, it has effected thorough cures of acute conjunctivitis, without the aid of any local application. (King)

Powell:

: Tincture of *Cimicifuga* rhizomes (fresh ~ :2, dry 1 :5): 15-25 minims up to 4 times/day. It may be used exclusively during the follicular phase of the menstrual cycle (day 1-15). Decoction of *Cimicifuga* is generally not used because the active substances are apparently not well extracted by water. Powder of dried *Cimicifuga* rhizomes: #00 capsules: 1-2 capsules up to 3 times/day

Cimicifuga is appropriate for long-term use. It is often reported that the beneficial effects of *Cimicifuga racemosa* are slow in appearing and may take one month before the full effects of treatment with this botanical is established.

Contraindications:

Cook states that it is not an agent suitable for any malady where the pulse is depressed, the skin cold, the tissues relaxed and the general sensibilities of the frame reduced. He also affirms that acidity of the stomach will almost wholly prevent its action as does King.

Cimicifuga is generally contraindicated in pregnancy and lactation with the exception of assistance in birth. (Mills and Bone) while Dr. Alschuler and the Eclectics use it as a partus preparatory. Cook reports that it may induce premonitions of abortion although these cases are the exception. Brinker contraindicates its use during the first trimester of pregnancy due to its emmenagogue effect. He also cautions against use in nursing mothers due to its potential toxicity in large doses (empirical) and the potential irritation to the infant digestive tract.[635]

Herbs with estrogenic activity should be avoided in cases of estrogen sensitive cancers. (Alschuler)

Powell: Excessive doses of *Cimicifuga* are found to cause frontal headache, which ceases after discontinuance. *Cimicifuga* is reported to sometimes aggravate hypotension. *Cimicifuga* is contra-indicated in pregnancy.

Toxicity:

In large doses, Cimicifuga will produce general relaxation, dimness of vision, dizziness, bradycardia, hypotension, vomiting, diaphoresis, and frontal headache. These effects are due to the resins, isoferulic acid, cimicifugin, and tannins, according to Dr. Alschuler. Mills and Bone describe the frontal headache to be characteristic and may occur even at therapeutic doses although Cook states that this effect is more likely to occur with use of the tincture, but rarely with the powdered herb or infusion. A few studies have reported that some women complained of continuing stomach problems after use of the standardized extract.

In large doses its action on the nervous system is very decided, producing vertigo, impaired vision, dilatation of the pupils, nausea, vomiting, and a reduction of the circulation, but no alarming narcotic effects. Three drops of the saturated tincture given every hour, for 20 hours, have been known to produce symptoms in every way simulating those of delirium tremens. Green tea is said to counteract its narcotic influences.[636]

Cimicifuga is not genotoxic or mutagenic although three cases of use within the first trimester of pregnancy also reported fetal malformations.[637]

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Cinchona officinalis — Rubiaceae

Common name: Peruvian Bark, Jesuit's Bark, Red Cinchona, Yellow Cinchona

Habitat: Native to South America.

Botanical description: Cinchona trees grow up to 60 feet tall. The elliptical leaves are up to 30 cm in length. The flowers are up to 2 cm long and are light pink in color. The bark is 2 to 3 mm. thick with a gray outer surface and a reddish brown inner surface with fine longitudinal striations.

Parts used: Bark

Historical Use: The original use of Cinchona is not known. Its first recorded use was in 1639 when a prominent woman of Peru was cured from a fever. At this point, the importation of Cinchona into Europe was almost exclusively by the Jesuits. Several decades later Europeans began to use Cinchona. Cinchona became one of the most important herbs medicines in Europe and later in N. America as well.

Constituents:

- *Quinoline alkaloids:* (5%-15%): quinine, quinidine, cinchonine, cinchonidine and 40+ others, cinchonidine bitter triterpene acid monoglycosides, in particular chinovic acid-3-chinovoside, chinovic acid-3-glucoside [638]
- Catechol tannins (8%);

Pharmacology:

Cinchona is the original source of quinine, which in its purified form is used as a cure for malaria, the mosquito-borne plague of the tropics. In addition, quinine-based drugs such as Quinaglute and Quinidex are prescribed to control dangerous heartbeat irregularities. It was found that the two potassium channel blockers, quinine and quinidine, markedly enhanced phosphatidylserine synthesis and strongly decreased both phosphatidylcholine and phosphatidylethanolamine synthesis. The inhibition of phosphatidylcholine and phosphatidylethanolamine synthesis was due to the inhibition of the uptake of choline or ethanolamine, respectively, by the cells. This effect was also observed when using either cinchonine, cinchonidine and chloroquine. In contrast, these three drugs were unable to modify phosphatidylserine synthesis, indicating that the K+ channel blockers, quinine and quinidine, specifically affect the synthesis of this phospholipid. [639]

Medicinal actions: Bitter, antimicrobial, topically antiseptic, astringent, cholagogue

Traditional Medicinal Use:

Cinchona was frequently used by both Physiomedicalists and Eclectics with few other herbs observed so completely in regard to the scope of action on the body.

Cook described the bark as a slow and very permanent stimulant and astringent to nervous tissue. This effect, he observed, begins in the stomach, slowly and steadily extending first, the sympathetic nerves; second, the sensory nerves in general; and third, the spinal cord and brain (only with large doses or continued use). The astringency causes a protracted state of tension in the nervous tissue. Through the nerves, Cinchona reaches nearly all the organs of the body, thereby leading to increased sensibility and excitement, and inducing a peculiar and marked state of tension throughout.

By indirectly affecting the system at large, Cook observed that it causes excitement of the stomach and throat, with dryness; constipation, and warmth throughout the bowels; increased frequency and hardness of the pulse after a time, and dry warmth upon the surface; a general diminution of the secretions; finally a throbbing headache, and perhaps giddiness, with a general feeling of increased firmness of the muscular and other structures, as if the patient were " strung up." These results advance slowly, generally requiring from four to six hours; and may not entirely pass away under ten or twelve hours.

It was considered valuable in conditions of atony and laxity of the tissues; and where there are excesses of secretion consequent to atony. It is sometimes beneficial in chronic congestions (where Cook differentiates this from inflammation) as a secondary agent when the system is enfeebled. In other atonic difficulties, it is useful, as in gangrene, passive hemorrhages, chronic leucorrhea and diarrhea with laxity of fiber, etc.

- Cardiovascular Conditions: The cardiac side effects of Cinchona bark were discovered very soon after its introduction to the materia medica of academic medicine towards the end of the 17th century. Therapeutically these effects were utilized sporadically as early as in the first half of the 18th century. Purified quinine became a standard component of cardiac therapy in the 2nd half of the 19th century. In 1918 quinidine was introduced as the common alkaloid of Cinchona bark and is still used in rhythmology today. [640]
- Inflammatory Conditions: In any periodical recurrence of suffering, where the nerve tissues become relaxed and there is no tendency to excitement or engorgement of the brain, it is often of much service, as in such forms of periodical neuralgia,

rheumatism, diarrhea, headache, etc. Cook considered calling it a febrifuge an entire misnomer as it can increase present febrile excitement and increase the possibility of injury by causing a retention of secretions. None the less, he noted that the chief use of this article was as an antiperiodic, averting the "chill" of intermittent fevers.

In regard to periodicity of chills and fever, Cook elucidated the method of appropriate of administration. He observed that "chills" are dependent upon recession of blood from the surface to the portal organs, constituting nature's first step in the effort to restore the circulation to balance. Accordingly, he noted that successful medication for a treatment of this condition must fulfill three indications:

1. remove the hepatic obstructions and accumulations which are the prime disturbers of the circulation
2. sustain the firmness of the nervous tissues, to avert that relaxation of these structures which really forms the chill
3. secure a full outward circulation, so that the heart and arteries shall be sustained simultaneously with the nerves.

Cook stated that Cinchona achieves only the second of these requirements and is wholly insufficient without the other two being met. Hence, Cinchona may "break the chill," but never permanently cure an intermittent. Therefore, the only proper use of bark in the management of intermittents is to attenuate the nervous relaxation. It is not a suitable agent to use during the intervals between the paroxysms, when hepatic tonics and arterial stimulants are needed.

- Gastrointestinal Conditions: Cook stated that the idea of sustaining appetite and digestion by use of Cinchona may fasten the disease, which is the cause of the failing appetite and digestion, more firmly upon the system.
- Topical Applications: Cook noted that Cinchona is excellent when employed topically for an astringent and moderately antiseptic article for weak and degenerating ulcers, aphthous sores, etc.

Current Medicinal Use:

- Cardiovascular Conditions: Quinine is a cardiac depressant and may be useful in tachycardic hearts.
- Gastrointestinal Conditions: Digestive insufficiency manifesting as decreased appetite, abdominal distention, and flatulence indicate the use of Cinchona. Cinchona bark is used to correct loss of appetite, dyspepsia and flatulence with a sense fullness because it stimulates the secretion of saliva and gastric juices.[641] When ingested, Cinchona imparts a warming influence on the digestive organs.
- Inflammatory Conditions: Cinchona imparts strength and tone to a weakened system. This is especially true when the patient has a febrile, eruptive and inflammatory disease in which the symptoms appear with periodicity. During the phases of lesser symptoms, Cinchona is most effective. Cinchona may maintain nervous tension, which is one component of averting periodic chill. Periodic fevers, diarrhea, dyspepsia, and neuralgia will respond favorably to Cinchona bark in most cases. Cinchona may also be used as a tonic after an exhausting illness or episode of hemorrhage. Cinchona is not to be used in acute inflammatory states, states of deficient secretions or during fever. Internally, the analgesic effects are most notable in terms of reducing the achiness that may accompany a cold or flu.
- Infectious Conditions: Cinchona has antimicrobial effects as well. Cinchona can be used to prevent the progression of a common cold. The alkaloids in Cinchona, particularly quinine, are antimalarial. Although, this is primarily a historical usage, quinine may again be helpful in treating malaria, which is resistant to newer drugs.
- Topical Applications: Cinchona has mild analgesic effects. These effects are evident with external use and may help to relieve muscle spasm and pain.

Current Research Review:

- **Oncology:**
  - **Malignant lymphoid diseases:**[642]
    - Design: Open phase I multicenter dose escalation clinical trial
    - Patients: Patients with refractory or relapsed malignant lymphoid diseases.
    - Therapy: Cinchonine dihydrochloride, IV x 48 hours, escalated over five dose levels from 15-35 mg/kd/d. Cinchonine infusion started 24 hrs before IV. doxorubicin (25 mg/m2), vinblastine (6 mg/m2), cyclophosphamide (600 mg/m2) and methylprednisolone (1 mg/kg/d) (CHVP regimen) and lasted for 24 hrs after chemotherapy infusion
    - Results: Quinine's isomer cinchonine was identified in earlier studies as a potent multidrug resistance (MDR) reversing agent, both in vitro and in animal models. In this study an MDR reversing activity was identified in the serum from every patient and correlated with cinchonine serum level. The conclusion was that i.v. infusion of cinchonine might be started 12 h before MDR-related chemotherapy infusion and requires continuous cardiac monitoring but no reduction of cytotoxic drug doses.
- **Infectious diseases:**
  - **Malaria:**

    Study 1:[643]
    - Design: Randomized controlled clinical trial.
    - Patients: Sixty-four children, 8 mo-15 yo, with uncomplicated flaciparum malaria.

- Therapy: Qinimax (association of cinchona alkaloids), IM, 60 mg base/ml, 12.5 mg/kg q12h x 72 hrs, or Quinimax, IR (intrarectrally), 30 mg base/ml, 15 mg/kg q12h x 72 hrs.
- Results: No significant difference was demonstrated between the clinical effectiveness of quinimax administered by the IM vs IR route. Similar effect were also observed on parasitemia which disappeared completely in all patients by the end of the 72-hour treatment. Administration of diluted injectable quinine by IR route was concluded to be an effective, well-tolerated alternative for treatment of childhood falciparum malaria.

Study 2:[644]

- Design: Open randomized controlled clinical trial.
- Patients: Seventy-six children with cerbral falciparum malaria
- Therapy: Quinimax (Cinchona alkaloids association), intrarectral (IR), 20 mg/kg, then 15 mg/kg q8h) or Quinimax, IV, 8 mg/kg infused over 4 hrs q8h x 2 days. Followed by chloroquine, po 10 mg/kd/d x 3 d.
- Results: IR group: 35 children cured (90%) and 4 died; mean coma recovery time – 34.6 hrs. IV group: 28 children cured (76%), 9 died; mean coma recovery time – 33 hrs. Quinimax, IR, can be an alternative to IV administration for rapid onsed childhood cerbral malaria in the rural tropics, where the safety of parenteral administation cannot be guaranteed.

Study 3:[645]

- Design:
- Patients: Twenty-one children, 2-14 years, with acute uncomplicated Plasmodium falciparum malaria
- Therapy: (1) Quinine gluconate, 12.8 mg/kg intrarectally, (2) Quinimax. 8 mg/kg, IM, or (3) Quinimax, 8 mg/kg, IV, 4 hrs infusion q8h x 3 days.
- Results: At 36 h, body temperature of all children of the three groups was returned to normal and remained so until day 7. The decrease in parasitaemia did not differ between the three groups and the time required for a 50% fall in parasitaemia relative to baseline was 12.3 +/- 5.4, 18.2 +/- 6.1 and 14.5 +/- 4.2 h in the intrarectal, intramuscular and intravenous treatment groups, respectively. Parasitaemia expressed as a percentage of initial values was not significantly different in the three groups after 48 h of treatment. All the patients were aparasitaemic by day 7.4. The good tolerability and efficacy of intrarectal quinine formulation outweigh its low approximate bioavailability. It was found to be a safe and effective alternative to intramuscular quinine injection for the treatment of children with acute uncomplicated Plasmodium falciparum malaria in the field.

Study 4:[646]

- Design: Randomized controlled clinical trial.
- Patients: Seventy-two children with uncomplicated Plasmodium falciparum malaria attacks, under 10 yo
- Therapy: Quinimax salt, po 25 mg/kg qd in 3 equal doses x 3 days or x 7 days.
- Results: Clinical status was improved in 99.6% of patients treated for 3 days and in all patients treated for 7 days. Even if the 3 d course did not systematically eliminate parasitaemia, reducing oral Quinimax treatment of uncomplicated malaria from 7 to 3 d did not increase the recurrence of attacks, even among the youngest children. Oral Quinimax for 3 d was concluded to be a possible alternative regimen to chloroquine and sulfadoxine-pyrimethamine for treating uncomplicated malaria in highly endemic areas of Africa where clinical resistance to these drugs exists.

Study 5:[647]

- Design: Randomized controlled clinical trial
- Patients: Children with uncomplicated falciparum malaria.
- Therapy: Combination of quinine/quinidine/cinchonine (combined drug) or quinine alone
- Results: The cure rates obtained with the high dose regimen of the combined drug (100%) were significantly higher than in the low dose regimen group (37.5%), and the quinine regimen produced a 50% cure rate. Red cell drug concentrations were more closely related to the outcome of treatment than to plasma concentrations. The conclusion was that the combined drug may be very useful for treatment of multi-drug-resistant P. falciparum infections.

Pharmacy:

In regard to treatment of intermittent fever and chills, Cook advised the administration timed three to six hours prior to the onset of chills rather than during to avoid inducing nausea and aggravating the febrile stage.

Dried bark: 1/2 to 3/4 tsp./ cup; steep 10 minutes; 1 cup 15 min. TID ac [1tsp.=1.7 g]

Fluid extract: 0.6-3 gm/day of extract containing 4%-5% total alkaloids

Drug Interactions:[648]

- **Chemotherapy (positive):** Cinchonine alkaloid has been demonstrated to decrease multi-drug resistance in cancer chemotherapy in animal studies. Cinchonine inhibits efflux of cytotoxic drugs thus reducing drug resistance. Cinchona extract may thus prove to be efficacious in reducing multi-drug resistance and thus improving chemotherapy effectiveness. Further research is needed in this area.

- **Anticoagulants (positive):** Cinchona potentiates coumarin derivatives (empirical), anticoagulants or drugs that induce thrombocytopenia due to the rare action of platelet reduction. Brinker only cites secondary sources for this information.
- **Rifampicin (negative):** Quinine clearance is increased with use possibly due to enzymatic induction.
- **Tobacco (negative):** Quinine clearance is increased with smoking possibly due to enzymatic induction.
- **Flecainide (antiarrhythmic; positive):** Brinker speculates that the plasma concentration of Flecainide may be increased due to quinine.
- **Astemizole, terfenadine(Antihistamines)**: Combination with Cinchona may cause ventricular arrhythmia due to the quinine content (speculative).
- **Digoxin (positive):** The plasma concentration of digoxin may be increased (speculative).
- **Cimetidine (positive):** The plasma concentration of quinine may be increased to inhibition of its metabolic conversion by cimetidine (speculative).

Contraindications:
Cook stated that it is an unsuitable article wherever there is the least tendency to gastric or intestinal irritation.
He also noted that it is inappropriate when the structures are tense, when there is febrile or inflammatory processes, dryness of the tongue and fauces, nervous irritability, and a deficiency of secretion; and when harm may ensue from diminishing secretions and excretions.

In conjunction with the above, Brinker also contraindicates the use of Cinchona during pregnancy and nursing (empirical and animal studies).[649]

Toxicity: Apparently, up to 30% of patients demonstrate a reaction to Cinchona.[650] A hypersensitivity skin rash and fever may result. Rarely, some people may experience bleeding because of an induced thrombocytopenia. Chronic overdose may result in cinchonism, which is characterized by: headache, abdominal pain, rashes and visual disturbances. Pregnant women, people with quinine hypersensitivity and people with peptic or gastric ulcers should not take Cinchona.

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[650] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p65

Cinnamomum verum

Lauraceae

Common name: Cinnamon

Habitat: Native to Sri Lanka and southwest India, cultivated world-wide

- Flower and Fruit: The flowers are whitish green, inconspicuous, and have an unpleasant smell. They are arranged in loose, axillary or te4rminal panicles; they are about 0.5 cm long and are covered in silky hairs. The fruit is berry-like, ovoid-oblong, short-thorned, and half-enclosed by the epicalyx.
- Leaves, Stem and Root: The plant is a heavily foliated evergreen tree 6.5-12 m tall with a pale brown bark in thin quills, several rooled, inside one another. The branches are cylindrical with a gray-brown bark. The leaves are opposite, splayed horizontally to leaning, initially red, later green, tough. They are about 12 cm x 5 cm, roundish-ovate or ovate-lanceolate to oblong, more or less acuminate and entire-margined. The leaves smell like cloves.

Parts used: Inner bark and oil distilled from bark and leaves

Constituents:

- volatile oil (up to 4% consisting of cinnamaldehyde, cinamyl acetate, cinnamyl alcohol, cuminaldehyde, eugenol, and methyleugenol)
- tannins, cinnzelanin, cinnzelanol, coumarin

Pharmacology:

- Cinnamic acid is an excellent hypoglycemic
- Volatile oils: antifungal, antiviral, bactericidal and larvicidal actions. Eugenol, eugenol acetate and methyl eugenol enhance trypsin activity *in vitro*. Bark also shown strong lipolytic action. [652]

Medicinal actions: Aromatic, astringent, stimulant, carminative

Traditional Medicinal Uses:

Current Medicinal Uses:

- Cinnamomum is chiefly employed for its smooth muscles relaxing effects. It acts systemically in this regard and is thus useful in the treatment of hypertension, bronchial spasm, dysmenorrhea, diarrhea and spastic constipation and as a carminative. As a carminative, cinnamon is a useful companion to purgatives and is warming to the intestinal tract. The volatile oils in cinnamon are antibacterial, antifungal, and antiviral. Cinnamomum is an excellent agent to use for the treatment of colds and flus for this reason. In addition, cinnamaldehyde inhibits cyclooxygenase and lipoxygenase enzymes, thus decreasing inflammation. The tannins and the oils in cinnamon lend it astringent properties, and it is useful for the treatment of diarrhea and also can be effective for conditions of passive hemorrhage (i.e. idiopathic hematuria, epistaxis, menorrhagia, post partum hemorrhage). In the treatment of post-partum hemorrhage, cinnamon is well-indicated in a flaccid uterus and alternates well with ergot.

- 2-4 g/day of cut or ground bark.
- Infusion or decoction: 0.7-1.3 g/150 ml water TID.
- Fluid extract (1:1): 0.7-1.3 ml TID.
- Tincture (1:5): 3.3-6.7 ml TID
- Essential oil: 0.05-0.2 ml.

Toxicity/Side Effects:

- The concentrated oil in amounts > 0.5 ml/kg body weight can cause N/V, kidney damage, coma. Treatment is emesis or gastric lavage, activated charcoal, cathartic, maintain hydration and electrolytes.

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[651] *PDR for Herbal Medicines,* Medical Economics Company, Montvale, New Jersey, 1998, p. 752

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Coffea arabica

Rubiaceae

Common name: Coffee

Habitat: Coffea spp. are tropical shrubs.

Botanical description: The kernels are grey-green, oval-concave on one side and flat on the other with a central longitundinal groove. In commerical trade, the beans are roasted and become dark-brown.

Parts used: Kernels of the dried ripe seed

Identified Constituents: Caffeine 1%-2% (less when roasted), Trigonelline, Chlorogenic acid, Polyamines, Tannins, B vitamins, Carbohydrates, Oil, Tannin, Sugars, Pentosans

Medicinal actions: Stimulant, Diuretic, Antinarcotic, Antiemetic

Pharmacology: Caffeine intake causes wakefulness and sleep latency. Caffeine antagonizes the effect of adenosine on sympathetic nervous innervation of the vascular system, heart, kidney, and adipose tissue. Adenosine inhibits neuronal activity and behavior by inhibiting pre-synaptic neurotransmitter release and by inhibitory binding to post-synaptic neurons. Caffeine is structurally similar to adenosine and therefore counteracts the inhibitory effect of adenosine. However, chronic caffeine intake may cause an increase in the number of adenosine receptors. Consequently, larger amounts of caffeine are required to maintain the caffeine antagonism of adenosine. This may explain the habituation effect experienced by some users of caffeine-containing beverages. Additionally, if the caffeine intake is suddenly withdrawn or reduced, the adenosine effect is intensified resulting in symptoms of caffeine withdrawal.[654] Caffeine may cause transitory hypertension and arrhythmias in some individuals, however evidence that long-term administration of caffeine causes these conditions is lacking.[655]

Medicinal use:

: Coffee is drunk as a flavorful stimulating beverage throughout the world. The medicinal use of coffee is no longer common. However, there are some medicinal indications for coffee.

- Pain Conditions: Coffee potentiates the analgesic effect of aspirin and other non-steroidal anti-inflammatory drugs.
- Gastrointestinal Conditions: Coffee is a bitter substance and is a powerful promoter of peristalsis. For these reasons, coffee is indicated in people with digestive insufficiency and constipation. In addition, coffee has antimicrobial effects and is therefore indicated in infectious gastroenteritis as a supportive herb to kill the pathogen and promote its elimination. The stimulatory effect of coffee on digestion is utilized in detoxification as well. Coffee enemas are will stimulate peristalsis and waste removal from the colon. Oral intake of coffee may promote detoxification as well. The bitter effects of coffee are most evident in promoting HCl production and the release of bile.
- Nervous Conditions: The stimulating effect of coffee is most evident on cerebral functioning. Coffee increases mental alertness and stays fatigue and drowsiness. These cerebral effects of coffee are the result of the adenosine antagonism and also of its vasodilatory effects on cerebral and peripheral vasculature. Coffee is thus also an effective way to treat headaches secondary to vasospasm and vasoconstriction.

  Coffee may act as an anti-depressant. Regular ingesters of coffee have a decreased incidence of suicide. However, one study demonstrated that people who eliminate both caffeine and sugar from their diet demonstrate significant reduction in their depression for at least 3 months following the eliminations.[656] Additionally, coffee worsens anxiety type of depression.
- Ergogenic Aid: Caffeine is also used to enhance exercise performance. Caffeine potentiates calcium release from skeletal muscle sarcoplasmic reticulum. Caffeine also increases fat breakdown, facilitates central nervous system transmission, reduces plasma potassium during exercise, increases force of muscle contraction at lower frequencies of stimulation and has a muscle glycogen sparing effect. These changes result in ergogenic benefits from caffeine during endurance exercise.

Pharmacy: 1 TB / cup infusion; 1 cup QD – TID
Doses of caffeine at 6 mg per kg body weight will be of ergogenic benefit in endurance performance.[657]

Contraindications:

Toxicity: Drinking less than 5 cups of coffee per day long term does not appear to increase the risk of cancer, cardiovascular disease, peptic ulcer or arrhythmia. Short term consumption of coffee can cause diuresis, gastrointestinal distress, tremors, insomnia, and anxiety. In persons sensitive to the effects of caffeine, caffeinism may occur. This is manifested by tremors, diuresis, arrhythmia, agitation, insomnia, diaphoresis, gastrointestinal distress (usually loose stool) and anxiety.

Cola nitida

Sterculiaceae

Common name: Cola, Guru nut, kola nut,

Habitat: An evergreen tree native to W. Africa, Nigeria, Brazil, Sri Lanka, and Indonesia.

Botanical description: The tree grows to a height of 20 m. The leaves are 6 to 8 inches long with pointed ends. The flowers are yellow with purple spots. The yellowish-brown fruit has 4 to 5 woody pods which contain singular to several seeds. The seeds are red-brown, irregularly shaped, usually oblong, convex on one side and flattened on the other side. Each seed is up to 5 cm long and 2.5 cm in diameter.

Parts used: Seed

Constituents: Caffeine up to 2.5%; Theobromine up to 0.1%; Tannoids 5% - 10%: catechol and epicatechol ; Starch up to 35%; Vitamins (ascorbic acid, riboflavin, thiamin; Iron; Beta-carotene)

Medicinal actions: Central nervous stimulant, Diuretic, Cardiotonic, Astringent, Anti-depressive

Pharmacology: Refer to Coffea spp. monograph for pharmacology of caffeine.

Medicinal use:
Cola nitida is used to combat physical and mental fatigue and weakness. Cola nut is chewed by natives of the countries where it is cultivated in order to increase stamina and physical and mental endurance. Cola nut used to be an ingredient in Coca-cola after cocaine became illegal.

- Nervous Conditions: Cola nitida is especially indicated in someone who is weak and deficient. Cola consumption will increase this persons energy and stamina and, in addition, will act as an anti-depressant. As an anti-depressant, Cola is most indicated in someone who has become fatigued as a result of heightened anxiety. Finally, the Eclectic physicians would use Cola to help people withdraw from alcohol. The CNS stimulatory effects of cola were thought to help people with alcohol withdrawal.
- Gastrointestinal Conditions: Other indications for Cola include nervous diarrhea. Cola is a pronounced astringent as well as a bitter. Cola will tonify the digestive system both through its bitter effects and its astringent effect.
- Cardiovascular Conditions: Cola also stimulates cardiac function. It will increase heart rate and raise blood pressure.

Pharmacy: Cola is best used short-term.
1-2 tsp. powdered seed / cup; decoct 10 – 15 minutes; drink as needed
1:5 tincture – 1 to 4 ml TID

Toxicity: Monitor people for caffeinism (see Coffea monograph). Contraindicated in people with pre-existing arrhythmia and/or hypertension.

Coleus forskohlii

Constituents: forskolin (labdane diterpene)

Pharmacology activates adenylate cyclase → ↑ cAMP resulting in

- inhibtion of platelet activation and degradation: antagonizes the action of PAF
  PAF activates neturophils, increases vascular permeability, enhances smooth muscle contractility.
- inhibition of histamine from mast cells
- positive inotropic
- smooth muscle relaxant all over th body
- increases insulin secretion
- increases thyroid output
- increases HCl secretion
- increases lipolysis
- topical application decreases IOP in glaucoma

Clinical uses:

allergy (asthma, ecema0
smooth muscle hypertonicity
intestinal colic
menstrual cramps
urniary bladder spasmosis
angina
hypertension
cardiovascular disorders: synergized by Crataegus
cervebrovascular insufficiency
glaucoma
cancer metastasis

Pharmacy: 50 mg extract standardized to contain 18% (9mg) forskolin bid to tid.

Contraindication: hyperchlorhydria. Use with digitalis as Coleulus poteniates the effects of this drug. Avoid in hypotension and ulcers. Do not use with antihypertensives.

Collinsonia canadensis

Labiatae

Common name: Stone root

Habitat:[658] Indigenous to N. America from Canada to the Carolinas in the U.S. Also found in central Europe.

Botanical description:[659]

- Flower and fruit: Flowers are yellowish, labiate, with red venation on the inside in richly blossomed panicles. The upper lip has an obtuse tip. The side tips of the lower lip are small and rounded; the middle tips are larger and fringed. The calyx is acuminate and has 2 stamens. The fruit is a small globose nutlet.
- Leaves, Stem and Root: The plant is a perennial that grows 90-120 cm high. The rhizome is grayish-brown, very hard, fibrous, up to 8 cm long. The shoots are glabrous, often tinged red, with few side shoots. Bark is very thin. Leaves are light green above and pale green, glabrous, broad, cordate, or ovate below, becoming narrower and shorter above.

Energetics: Collinsonia is mildly bitter and sweet, cool and dry, decongesting, astringing, stablizing, restoring and relaxing. [660]

Parts used: Rhizome, Leaves (topical)

Constituents and Pharmacology: [661] (Ubiquitous or non-active constituents not included)

- Beta-elemine (plant): *16 ppm*; Anticancer (Cervix)
- Caryophyllene (tuber): Aldose-Reductase-Inhibitor; Antiacne; Antiasthmatic; Antibacterial; Anticariogenic *MIC=>1,600 ug/ml*; Antiedemic; Antifeedant *500 ppm*; Antiinflammatory *IC50=100 uM*; Antispasmodic; Antistaphylococcic; Antistreptococcic; Antitumor; Candidicide; FLavor *FEMA 20-200*; Fungicide; Insectifuge; Irritant; Perfumery; Pesticide; Sedative; Termitifuge
- Delta-cadinene (plant): *13 ppm*; Aldose-Reductase-Inhibitor; Antiacne; Antibacterial *MIC800 ug/ml*; Anticariogenic; Antistreptococcic; Cytochrome-P450-Inducer; P450-Inducer; Pesticide; Testosterone-Inducer
- Elemicin (plant): *18 ppm*; Antiaggregant *IC50=360 uM*; Antidepressant *ihl*; Antifeedant; Antihistaminic; Antiserotonic; Antistress; DNA-Binder; Fungicide *MIC=8 ug*; Hallucinogenic; Hypotensive *ihl*; Insecticide *100 ppm*; Insectifuge; Larvicide; Neurotoxic; Pesticide; Schistosomicide
- Germacrene-D (plant): *230 ppm*; Pesticide; Pheromone

TCM Prospective:

- It enters the Liver, Spleen, Lung, Bladder and Dai meridians.
- Vitalizes the blood, removes congestion and moderates menstruation; benefits the rectum
- Promotes astriction and stops discharge and bleeding; raises central qi and relieves prolapse; stimulates digestion and relieves appetite loss: Indicated in cold damp in the intestines/Spleen qi xu
- Promotes expectoration, resolves phlegm and relieves coughing; opens the chest, relieves wheezing and benefits the throat: Indicated for damp phlegm in the Lung, Lung qi constraint.
- Circulates the qi, releases constraint and relieves pain; promotes and harmonizes urination, relieves irritation; clears internal wind and stops spasms: Indicated in Heart qi constraint, intestine qi constraints/Liver-Spleen disharmony, Urinary Bladder qi constriant and internal wind. (See Ellingwood, Nervous Conditions.)
- Promotes tissue repair and reduces contusion
- Damp cold urogenital and intestinal discharges are the most appropriate conditions it addresses. Compare with Terminalia He zi (Myrobalan fruit).

Medicinal actions:

- Diuretic, tonic, astringent, hepatic tonic, lithotrophic, anti-lithic, carminative, anti-inflammatory.
- Alterative, tonic, stimulant, diuretic.[662]
- Mildly stimulating, moderately astringent and diffuse in action. [663]

Traditional Medicinal Uses:

- Eclectics used stone root for a variety of conditions. Scudder considered Collinsonia as “one of the most direct and valuable agents,” and Cook saw Collinsonia as mildly stimulating, moderately astringent and diffuse in action.
- Gastrointestinal conditions: Stone root was considered a gastrointestinal tonic. It was used in colic pains and persistent laxity of the bowels,[664] to improve the appetite and facilitate digestion,[665] [666] to help in catarrhal gastritis with decreased circulation (with addition of Hydrastis), and to decrease persistent and steady rectal pain.[667] It was also known to relieve irritation and to help in: constipation, indigestion, irritative dyspepsia, chronic gastritis, chronic gastric catarrh, diarrhea, dysentery, colic, spasmodic conditions of the stomach and intestines, tenesmus (accompanying dysentery, as well as pain and inflammation following surgery), anal fistula, subacute proctitis, rectal ulcers and pockets. [668] Ellingwood specifically recommended

Collinsonia in all relaxed conditions of the mucous membranes of the large intestine and rectal conditions, where there is a sensation of constriction, heat and weight with deficient secretion from imperfect capillary circulation in the mucous membranes and dry, hard and round feces. [669]

- Genitourinary Conditions: Helpful in acute cystitis (combined with Aconitum) and spasm of the urinary sphincter and vagina.[670] Stone root was considered a mild diuretic in general, but strong diuretic in sub-acute gonorrhea (decreases leukorrhea) and catarrh of the bladder,[671] and mild tonic of the urinary tract[672] and renal organs. It was found useful in decreasing irritation secondary to urinary gravel, and was considered a good remedy for any catarrhal condition of the genitourinary system and spermatorrhea.[673]
- Cardiovascular Conditions: Collinsonia was a tonic to an enfeebled myocardium (e.g., in heart debilitated by prolonged fever or rheumatic inflammation); it was used to induce steady, permanent improvement in cardiac function and general circulation. It was considered to have a direct ability to strengthen relaxed, atonic vasculature (e.g. hemorrhoids[674], varicosities of the vaginal wall and vulva during pregnancy, and varicocele in the early stages or as a preventative).[675] Felter and Lloyd (*King's Dispensatory)* say that Collinsonia acts principally on the venous system. They support the usage of Collinsonia for weak heart conditions (e.g. mitral regurgitation).[676]
- Nervous System Conditions: Nervous headache, nervous dysmenorrhea and other gynecological conditions (in combination with Liriodendron and Leonorus),[677] chorea and epilepsy.[678] Felter and Lloyd thought that stone root has a marked action on the vagus, thereby relieving irritation in parts to which that nerve is distributed. They said it relieves irritation of the nervous system by increasing secretion from the kidneys and skin.[679]
- Respiratory System Conditions: Chronic laryngitis, chronic bronchitis,[680] [681] aphonia, resulting from vascular hyperemia or congestion, tracheitis. Specific indications included a sense of constriction with irritation/tickling in the throat, with cough arising from use of the voice.[682]
- External uses: The fomentation/poultice of the leaves was utilized for painful swellings, sprains, bruises, burns, ulcers, etc.[683] [684]

Current Medicinal Uses:

- Genitourinary conditions:
- Proctological problems: Anodyne, enhances healing, good astringent.[685]
- Gastrointestinal Conditions:
- Tonic astringent to the GI tract. Stomachic, stimulates gastric secretions (used with Taraxacum in geriatric px). Can be used for gastritis.[686]
- Respiratory conditions:
- Laryngeal and pharyngeal viral disease.[687]
- Cardiovascular conditions:
- Tonic to the venous walls.[688]
- [General info: Stone root exerts astringent and tonifying effects upon the mucosa of the gastrointestinal tract. In addition, stone root will help to reduce spasm of the smooth muscle of the intestine, thus relieving intestinal colic. It stimulates appetite, stimulates hydrochloric acid release, and gently stimulates peristalsis.
- Genitourinary Conditons: Collinsonia is primarily used as an astringent and to help pass kidney and gall bladder stones.
- Collinsonia canadensis is mainly used to aid the passage of renal and urinary calculi. It is most indicated in lithiasis with colic. It relaxes spastic smooth muscle and in this manner presumably aids the passage of urinary stones. It may also aid in stone dissolution. It relieves irritation and inflammation of the urinary tract and, therefore, is of great benefit when gravel is present in the urinary tract. Collinsonia is usually combined with other herbs such as Eupatorium purpurea and Hydrangea arborescens for this purpose. Stone root is a useful pelvic tonic. It can be used for conditions of the female and male reproductive organs especially when pelvic atony and poor venous circulation are present. Persons with amenorrhea, dysmenorrhea, menorrhagia, pruritis vulvae, spermatorrhea, or varicocele, may all benefit from stone root. Hemorrhoids, secondary to poor venous tone, will benefit from local and internal use of stone root.
- Nervous Conditions: Stone root acts upon the nervous system as well. It has a soothing, anxiolytic effect, and is especially indicated when nervous tension manifests in visceral spasm.
- Respiratory System Conditions: The astringent effects of Collinsonia are also useful in relieving hoarseness and cough secondary to overuse of the voice.
- Vascular Conditions: The astringent actions are pronounced on areas of venous congestion such as hemorrhoids and varicose veins. Topical application is usually the preferred method of administration. The hepatic tonification may be the result of stimulation of portal circulation.][689]

Pharmacy:

- Enema - whole plant tincture of unspecified strength, for proctological complaints: 50 gtts in ½ cup water.[690]
- Suppositories for proctological problems: hs

- Tincture
- Whole plant tincture of unspecified strength, for tonic and astringent action on GI tract: Sig 30 gtts TID ac.[691]
- Whole plant tincture of unspecified strength, tonic for GI tract: ½-1 dr.[692]
- 1:5 tincture, (40% EtOH): sig 2-8 mL TID.[693]
- For hemorrhoids: Collinsonia:Hamamelis, equal parts, sig: 20-30 gtts q 2 hrs. in combination with a compress of Hamamelis. [694]
- Dried root:
- Powdered root: 20 grains TID.[695]
- 1-4 grams TID[696]
- Infusion:
- 1 oz powdered root/quart boiling water, infuse x 1 hr. Sig: 1-2 oz q 4-3 hrs.[697]
- Decoction:
- 1-4 g root or rhizome/ 150 ml boiling water, simmer 5-10 min, strain. Sig: TID[698]
- For perspiration: 1 tsp/cup, sig: 1/4 to 1 cup TID.[699]
- Liquid extract:
- 1:1 liquid extract (25% EtOH): 1-4 mL TID[700]

Contraindications:

Toxicity:

- The fresh roots are extremely nauseating. Minute doses of the green plant will promptly promote emesis.[701]
- Orally, ingesting large amounts of stone root can cause intestinal tract irritation and colic-like pain, dizziness, nausea, and painful urination.[702]

Commiphora molmol (C. Myrrha) — Burceraceae

Common name: Myrrh, Bola (Sanskrit), Mu Yao (Chinese).

Habitat: NE Africa, Eastern Mediteranean countries, including Arabia.

Botanical description: Sturdy bushes growing up to 9 feet in height with knotted branches & branchlets which end in a sharp spine. The trifoliate, small, oval leaves are scanty. This shrub grows in dry areas. Through natural fissures in the bark or at sites of injury, a pale yellow granular secretion is formed. Upon drying, this secretion hardens to the size of about 2-3 cm. diameter & becomes a red-amber in color. Myrrh is aromatic & has a bitter taste.

Parts used: Oleo-gum resin - exuded from the bark & dried in the open air.

Energetics: Bitter, Pungent. Sweet, Heating. (-) Kapha & Vata. (+) Pitta in excess. Affinity for all tissues. Particular systems affected, include: Cardiovascular, Reproductive, Nervous, Lymphatic, & Respiratory.

Constituents:[703] [704]

- *Volatile oil* (2-10%): Including: Dipentene, Cadinene, Heerabolene, Limonene, Pinene, Eugenol, m-Creosol, Cinnamaldehyde, Cuminaldehyde, Cumic Alcohol.
- *Gum* (57-61%): Arabinose, Galactose, Xylose, Methylglucouronic acid.
- *Resin* (25-40%): Commiphoric acid, Heeraboresnene, HeerabolMyrrhol, Commiferin.
- *Steroids*: Coampesterol, Cholesterol, beta-Sitosterol.
- *Terpenoids* (30-50%): Particularly alpha-Amyrin.

Pharmacology:

There are three types of resins. Oleoresin is composed of resin & essential oil. Gum resins are composed of gums & essential oil. Finally, oleo-gum resin is composed of essential oil, gum & resin. Myrrh's many actions are thought to be due to its content of oleo-gum resin. In general, resins are sticky, water-insoluble, soften on heating, & they can not be easily represented by one simple chemical structure, but are instead composed of a complex mixture of many chemical structures which afford to a resins particular physical characteristics & actions. Resins are exuded by plants as a possible form of protection (as are mucilages & gums); & can also provide protection for animal tissues as well, in that they astringe & protect the tissues by local stimulation of the immune system. This mechanism is though to be due to Myrrh acting as a local contact allergen. In general, all resins are contact allergens, & hence have the potential of causing oral ulercation & contact dermatitis on local application.

More specificly, the oleo-gum resin in Myrrh has the following special effects. Since resinous compounds are poorly absorbed, they act as contact allergens & tend to be astringent to the tissues in which they come into contact. When a resin is combined with an essential oil, this combination tends to be anti-microbial in action by stimulating local macrophages which signal for a reciprocal immune

response. When oils, gums & resins are combined, they also have the general effect of stimulating local leucocytosis. Resinous constituents have been found helpful in relieving inflammation of the upper GI tract, due to their ability to astringe & soothe inflamed tissues. The ability of Myrrh to act as a contact allergen while at the same time as an anti-inflammatory agent may seem counterintuitive, but think about it this way. When a mucous membrane is stimulated, not only is an immune response mediated (which includes inflammation), but the mucosa also responds to this challenge by increasing its production of mucous as an immediate response to local irritation. Hence, while the immune response is being mediated, the local tissues are trying to protect themselves with a nice soothing layer of mucous. This also affords to Myrrh's ability to act as a mild anodyne. Secondly, the gums within Myrrh act as demulcents.

Gums are complex chains of uronic acid that are characterized by their highly viscous, slippery, slimy consistency. Gums are susceptible to hydrolysis to yield: xylose, mannose, arabinose & galactose; hence the preferred menstrum is water. When gums come into contact with water to produce the above sugars, they swell to become gelatinous. This makes gums useful as tissue demulcents, which can coat & soothe inflamed mocosa.

Myrrh is an effective warming expectorant due to its content of resins & essential oils, & hence is indicated in congestive respiratory conditions of a cold nature, such as certain forms of bronchitis & asthma.[705] [706]

Medicinal actions: Mucosal Stimulant. Expectorant. Antiseptic. Astringent. Anti-inflammatory. Anti-spasmodic. Carminative. Demulcent. Emmenogogue. Rejuvanative. Analgesic.

Current & Traditional Medicinal Use:

Historically, communities of the Middle East have long used Myrrh as incense & a mouth wash for sore gums & mouth sores. Myrrh is specificly indicated for use in chronic bronchitis that is characterized by profuse secretion of mucus or muco-pus w/ difficult expectoration; membranes that are lax & pallid; tonsils that are enlarged & spongy; a pale throat; soreness & sponginess of the gums; reproductive disorders of women, w/ associated sensation of heaviness & dragging in the pelvis & leucorrhoea.

In general, resins are warming & stimulating, & hence are a good choice for some types of cold ailments & to promote circulation.[707] Cold conditions w/ pale, lax, & flaccid tissues, are tonified & tightened. Overall, Myrrh tends have a normalizing effect on mucosal secretions - thinning copious, thick mucous & astringing to reduce the overall amount of mucous secreted by goblet cells, to reduce inlammed tissues.

Myrrh is a stimulant, esp. to mucous membranes. Its property of restraining the mucous discharges is observed to be most pronounced upon the renal & bronchial tract. It also exerts an antiseptic influence, & is used to promote expectoration, as well as menstruation. It has also been used as a vermifuge. It is generally used in enfeebled conditions of the body, & has been found useful in cases of excessive mucous secretion from any mucosal surface.

- **Dental Conditions:** As a mouthwash, combining tincture of Myrrh w/: sage oil, peppermint oil, menthol, chamomile tincture, expressed juice from Echinacea, clove oil, & caraway oil has been used successfully to treat gingivitis. In cases of acute gum inflammation, 0.5 ml of the herbal mixture in half a glass of water TID is recommended. This herbal preparation should be swished slowly in the mouth before spitting out. To prevent recurrences, slightly less of the mixture can be used less frequently. A toothpaste containing sage oil, peppermint oil, chamomile tincture, expressed juice from Echinacea purpurea, Myrrh tincture, & rhatany tincture has been used to accompany this mouthwash in managing gingivitis.[708]
- **Gastrointestinal Conditions:** Myrrh is of value in chronic gastritis & atonic dyspepsia with full, pallid tongue & mucous tissues, frequent mucous discharges & flatulence.[709] Commiphora through its astringent, anti-inflammatory, & demulcent actions are effective for chronic inflammation in an atonic Gi system. This action is best accomplished if the Myrrh is taken between meals, combining well w/ Gentian for this purpose.
- **Gynecologic Conditions:** Myrrh has some reputation as an emmenagogue. It is used in female disorders characterized by weighty, dragging sensation in the pelvis, & associated leucorrhoea. It was reputed to be useful in stimulating suppressed menses, & in some cases of anemia. However, in these conditions it was used as a supportive herb.[710] Cysts & ulcers (e.g. Bartholin's glands on the cervix), vaginitis including Candidiasis, Trichomonas, Gardernella, & HPV all respond favorably to douching w/ Commiphora. A combination of Calendula, Hydrastis, Echinacea & Commiphora can be effective against Trichomonas & Gardernella when diluted to 1 part tincture: 8 parts water.
- **Pulmonary Conditions:** Commiphora is indicated in acute & chronic conditions, such as: laryngitis, bronchitis & other pulmonary diseases, which are accompanied by profuse, tenacious secretions. Myrrh can be used topically in chronic pharyngitis that presents w/ tumid, pallid membranes, an elongated uvula, & spongy, enlarged tonsils.
- **Topical Applications:** Topically, it is a very useful application to indolent sores, gangrenous ulcers, an aphthous or sloughy sore throat, spongy or ulcerated conditions of the gums, caries of the teeth, etc. In general, Myrrh astringes & tonifies sluggish mucous membranes. Commiphora powder can also be sprinkled directly on warts, abrasions, & infections. As a topical for warts, Myrrh can be mixed w/ Sanguinaria, Thuja & Calendula. Viral rashes, in diseases such as Coxsackie viral disease (Hand-foot-&-mouth disease), can be soaked in a solution of Myrrh & Achillea for resolution. If applied to a blister, Myrrh will bring the blister out more quickly, to then be further treated w/ Symphytum or Hydrastis.

Current Research Review:

- **Secondary hypothyroidisim:** Commiphora molmol, like its Indian relative Commiphora mukul, has a stimulating effect on the thyroid. The volatile oils bind to the TSH receptors on the thyroid exerting a stimulating effect, indicating its use in secondary hypothyroidism.[711]
- **Schistosomiasis:** Commiphora molmol was found to be effective for the treatment of schistosomiasis in a dose of 10 mg/kg of body weight qd x 3 days in 204 patients with a cure rate of 91.7%. Of those who did not respond, 76.5% were cured with re-treatments, using a dose of 10 mg/kg body weight qd x 6 days. Twenty patients had biopsy six months after the treatment, and none of them showed living ova. The side effects were mild and transient, and drug was well tolerated.[712]

Pharmacy:[713]

- 1:5 tincture: BID-TID
- Rinse or gargle: 5-10 gtts in glass water
- Dental powders: 10% powdered resins

Since resins are poorly absorbed, the best applications for Myrrh include using it as a gargle, steam inhalation, & douche.

Contraindications/Toxicity:

Commiphora is contraindicated in acute inflammation because it will stimulate more mucous secretion & therefore aggravate the inflammation.

Contraindicates in fever, arterial agitation, excessive uterine bleeding & pregnancy based on empirical evidence.[714]

C/I in conditions of high pitta.

In large doses, Myrrh causes increased pulse, increased temperature, gastric burning, diaphoresis, vomiting, & purgation. Commiphora molmol is an emmenagogue.

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Commiphora mukul

Berseraceae

Common name: guggul lipid

Habitat:

Botanical description:

Part used: resin

Historical use: Traditionally an Ayurvedic herb, Guggul has been used for rheumatoid arthritis, lipid disorders, obesity and other disorders of lipids including a description of atherosclerosis.

Energetics:

Constituents: guggul sterones, non-aromatic acids, diterpenes, lignans, fatty acid alcohols, sterols, esters

Pharmacology:

The extract isolates ketonic steroid compounds known as guggulsterones. These compounds have been shown to provide the lipid-lowering actions noted for Guggul.[715] Guggul significantly lowers serum triglycerides and cholesterol as well as LDL and VLDL cholesterol. At the same time, it raises levels of HDL cholesterol. Possible mechanisms for this effect on cholesterol include; stimulation of the thyroid gland (thyroid stimulation reduces cholesterol), and stimulation of the LDL receptor causing enhanced uptake of LDL and decreased cholesterol synthesis. [716] As antioxidants, guggulsterones keep LDL cholesterol from oxidizing.

Guggul has also been shown to reduce the stickiness of platelets, increase the breakdown of fibrin, decrease platelet aggregation, and delay coagulation time.[717]

Medical actions: anti-inflammatory, anti-hyperlipidemic

Traditional Medicinal Uses: In Ayurvedic medicine, Guggul is utilized in the treatment of a variety of conditions including abscesses and cysts, lymphadenitis, tuberculous adenitis, bronchitis, ulcers, diabetes, gout, skin disorders, dysmenorrhea and amenorrhea obesity and rheumatoid arthritis. It was also used as a gargle or mouth wash for spongy gums, dental carries, mouth and throat sores/ulcers and tonsilitis.

Current Medical Uses:

- Cardiovascular Conditions: Prevention of free radical damage of the heart has been shown to be affected by guggul as well as improved heart metabolism. In addition, guggul may prevent the development of a stroke or embolism.

A double-blind placebo-controlled study of Guggul for reducing cholesterol enrolled 61 individuals and followed them for 24 weeks. [718,719,720] After 12 weeks of following a healthy diet, half the participants received placebo and the other half received Guggul at a dose providing 100 mg of guggulsterones daily. The results after 24 weeks of treatment showed that the treated group experienced an 11.7% decrease in total cholesterol, along with a 12.7% decrease in LDL, a 12% decrease in triglycerides, and an 11.1% decrease in the total cholesterol/HDL ratio. These improvements were significantly greater than what was seen in the placebo group. Similar results were seen in a placebo-controlled trial of 40 individuals [721] and a double-blind study of 228 individuals given either Guggul or the standard drug clofibrate found approximately equal efficacy between the two treatments. [722]

- Dermatologic Conditions: In a study of acne, 10 patients were treated with 50 mg/day of gugulosterones for 3 months. Compared to tetracycline patients with oily skin showed more improvement with C. mukul. [723]
- Endocrinological Conditions: Guggul is stimulating to the thyroid.
- Inflammatory Conditions: Use of guggul is indicated in acute and chronic inflammation. Its effect is about 1/5th that of hydrocortisone and equal to phenylbutazone and ibuprofen. In chronic inflammation, it has been shown to be more effective than these three medications in reducing the severity of secondary lesions.
- Metabolic Conditions: Guggul is indicated in hyperlipidemia, particularly Type IIb (high LDL, VLDL, TG) and Type IV (high VLDL and TG). In turn, guggul is indicated in the prevention and treatment of arteriosclerosis as formation and regression of atherosclerotic plaques has been demonstrated in animals.

Pharmacy: Guggul contains a mixture of diverse chemical constituents which can be separated into soluble and insoluble fractions. The insoluble fraction is considered toxic and has no other pharmacological activity, thus preparations containing only the soluble fraction are used.

Most products are standardized to 2.5% or 5%. Therapeutic dose is 25 mg tid = 500 mg of 5% extract tid. Some companies are beginning to concentrate to 10-20% guggulsterones, but have not been evaluated.

Drug Interactions:

Contraindications:

- Guggul is contraindicated in hyperthyroid conditions due to thyroid stimulating effects (T. Low Dog MD)

Toxicity: Crude gum guggul, alcoholic and ether extracts are associated w/ skin rashes, diarrhea and other unpleasant effects due to the insoluble fraction. Otherwise, purified guggul has not displayed any toxic effects when evaluated by testing liver function, blood sugar control, kidney function or hematological parameters. It does not possess embryotoxic or fetotoxic effects and is therefore considered safe to use in pregnancy

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Convallaria majalis

Liliaceae

Common name: Lily of the Valley

Botanical description: Convallaria is a lily plant with lanceolate leaves up to 15 cm. long and 5 cm. wide. The flower stem holds 8 to 12 small, stalked, bell-shaped white flowers which bloom in May. The root is slender and runs just underneath the surface.

Part Used: Herb and Flora. Fresh leaves are the most powerful. (Berries are poisonous.)

Constituents:

- Cardioactive glycosides: primarily convallatoxin and several cardenolides(convallatoxol, convallamarin, convallarin, and convallaric acid)
- Other constituents: saponins, flavonoids, asparagin

Pharmacology:

This is one herb where it has been clearly established that the whole plant is most effective. Overall, Convallaria exerts a positive inotropic and negative chronotropic action on the heart. Different glycosides are necessary for solubility and others for their action on the heart, and their natural configuration provides the most effective action. Although the aglycones are stronger than those in Digitalis, the glycone portion of the glycosides in Convallaria slows absorption. Convallatoxin has an absorption rate of about 10% and is increased by the other components in the herb. Additionally, the glycosides have a shorter half-life than those found in Digitalis.

Medicinal actions: Cardio-tonic, anti-arrhythmic, hypertensive, diuretic

Traditional Medicinal use:

Specific Indications and Uses: Heart irregularities due to mechanical impediments; mitral insufficiency; edema of cardiac origin; palpitation and vehement heart action, with arrhythmic movements, dyspnoea, and diminished arterial pressure. Quickened pulse with capillary obstruction.[724]

- Cardiovascular Conditions: The chief use of Convallaria by the Eclectic physicians was that of a heart remedy. In small doses Convallaria is a tonic to the heart, strengthening its action. It was noted that Convallaria has an two effects on the heart: cardiac excitation is relieved by moderate doses, while large doses increase the heart action.

Due to its action on the heart it acts secondarily as a diuretic and was first for this purpose by the Russians. Like Digitalis, it was considered useful in those cases of edema where there is diminished myocardial circulation and where there is evidence of obstruction. Palpitation and irregular movements, dyspnea, diminished renal action with increase of solids in the urine, hepatic fullness and engorgement are usually symptoms of this form of cardiac inefficiency. The cases of edema benefited, therefore, are those of cardiac origin with feeble circulation and diminished blood pressure.

Mitral insufficiency, with attendant dyspnea and palpitation, is considered a proper indication for Convallaria. Insufficiency or stenotic conditions of the aorta are less benefited than mitral complications.

Convallaria should be thought of in the cardiac debility following severe and exhaustive diseases.

- Gastrointestinal Conditions: Convallaria was also considered a tonic to the digestive system, increasing the appetite and digestive power, and acting slightly as an aperient.
- Topical Applications: The powdered flowers have been used in fomentations for the removal of ecchymoses.

Current Medicinal Use:

- Cardiovascular Conditions: Convallaria is a weaker (and safer) cardioactive plant than Digitalis purpurea due to the pharmacologic properties of its cardiac glycosides described above. Convallaria is most indicated in bradycardic and/or arrhythmic forms of heart failure, although tachycardic hearts also respond to this herb. Dr. Mitchell notes that Convallaria slows the pulse and corrects some arrhythmias by increasing coronary circulation.

A heart that is weakened secondary to poor valvular function is most likely to respond favorably to Convallaria. Thus, mitral stenosis, mitral regurgitation and cor pumonale are especially good indications for the use of this plant. Dr. Bastyr would combine Convallaria with Echinacea and Phytolacca to retard valvular deterioration.

Convallaria is indicated in mild to moderate degrees of heart failure. The asparagin has a diuretic effect and helps to drain fluid retained in edematous tissues. The flavonoids stimulate vasodilation of coronary vessels, although the plant has a slightly hypertensive effect systemically. The vital character of Convallaria can be characterized as strengthening and calming to the heart and mind.

Pharmacy: Tincture 1:5 40% sig 0.5-1.0 ml TID (8-15 drops)

Infusion: 1 tsp./cup TID [150 mg TID] gently decocted.
Daily dose: 2-3 mg p.o. or 0.2-0.3 mg intravenously of standardized extract (standardized to 0.2-0.3% cardioactive glycosides)
5-20 gtt bid (start at 5 gtt and titrate up) Mitchell

Drug Interactions: [725]

- Do not use in conjunction with potassium depleting drugs such as diuretics, quinidine, anthraquinone glycoside containing botanicals and corticosteroids.
- Caution when combining with other cardiac glycoside containing botanicals due to additive effects.

Contraindications: No information is currently available from the selected resources.

Toxicity:

Compared with Digitalis, Convallaria is generally as efficient, both as a heart tonic and as a diuretic, and is safer. Moreover, it is freer from cumulative effects.

Signs of toxicity include nausea, vomiting, violent purging, cardiac arrhythmias, increased blood pressure, restlessness, trembling, mental confusion, extreme weakness, depression, collapse of circulation, death.

[724] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[725] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 234

Crataegus oxycantha

Rosaceae

Common name: Hawthorne

Habitat:

Botanical description: Hawthorne is a hairless, thorny, deciduous shrub found in woodlands. It has 3-5 lobed leaves with uneven indentations particularly near the tip. White, dense clusters of flowers are followed by red 1-2 seed bearing false fruits. The plant flowers in early summer and the berries appear in September.

C. oxycantha has two seeds in the berry, C. monogyna has one seed in the berry, C. douglasi (?) and other C. spp have multiple seeds in the berry. Leaves are distinctly lobed. Flowers are white (ornamentals are pink). Berries turn red or black. Thorns can be 3-4" long. Stamen heads change from a dark orange red to pale after bees have visited the flower (common finding in the rosaceae family)

Parts used: Flora, leaves, and berries

Historical use: The shrub has been used for wood, hedges and flavoring for liquor (berries).

Energetics:.

According to Holmes: Crataegus is primarily mildly sweet, bitter, astringent, mildly cooling and dry. Secondarily, it is nourishing, restoring, calming, astringing, softening and dissolving. Crataegus has a tropism for the heart, arteries, intestines, blood and nerves. In TCM, the fruit of C pinnatifida and C. cuneata have been used to improve digestion, stimulate circulation and remove blood stasis Meridians entered include the PC, HT, SI, and KD and the biotypes indicated are Yang Ming Earth and Tai Yang.

- Strengthens and restores the heart, balances and harmonizes the circulation: Indicated in heart qi xu.
- Tonifies the yin and clears deficiency heat; supports and stabilizes the heart and calms the spirit: Indicated in yin xu, heart and kidney yin xu.
- Stimulates the heart, promotes urination and relieves congestion; softens deposits and causes weight loss: Indicated in heart xue stagnation, phlegm and damp accumulation
- Removes stagnancy and relieves distension; creates astriction and arrests discharge: Indicated in spleen qi xu with damp accumulation, heart xue and spleen qi xu, qi stagnation in the lower jiao and food stagnation. Holmes describes its use a digestive dispersant in cases of stagnation in the intestines.

Because Crataegus has a function restoring and stimulating effect on the heart and circulation, a net *balancing effect* occurs because the heart's basic energetic role is to balance metabolism and neurosensation functionally and structurally.

In Ayurvedic medicine, Crataegus increases Vata and decreases Pitta and Kapha.

Constituents:

- Flavonoids: (highest in flowers, then berries with the exception of OPC's which are highest in the leaves)
    - quercetin or O- glycosides: quercetin-3-galactoside hyperoside, rutin, luteolin-O-glycoside
    - flavone C-glycoside: Vitexin, Vitexin-rhamnoside
    - oligomeric procyanidins/OPC's: procyanidin B-2, epicatechin, catechin
- Other constituents: amines(phenethylamine, o-methoxyphenethylamine, tyramine), Phenolic acids (chlorogenic, 2-phenylchromone derivatives), catechols, carboxylic and triterpene acids (crategolic acid, ursolic acid) , tannins, ascorbic acid

Pharmacology: Antioxidant activity; co-factor for vitamin C intake; stablization of connective tissue tone; reduction of cholesterol[726]

Pharmacokinetics**:** Studies have shown rapid absorption of OPC's with localization in tissues rich in glycosaminoglycans and a plasma half life of 5 hours. Rutin showed poor absorption suggesting that OPC fragments, resulting from bacterial activity, are more bioavailable than flavonoids.

Crataegus has numerous beneficial actions on the heart and blood vessels. It may improve coronary artery blood flow and the contractions of the heart muscle and may mildly inhibit angiotensin-converting enzyme (ACE) thereby reducing production of the potent blood vessel-constricting substance angiotensin II. This reduces resistance in arteries and improves extremity circulation. Crataegus extracts may mildly lower blood pressure in some individuals with high blood pressure. [727]

The bioflavonoids in Crataegus are potent antioxidants. The oligomeric procyanidins are effective in strengthening and stabilizing collagen in vitro by forming cross-links between the polypeptide chains of collagen. [728]

The amines have been shown to exert a positive inotropic influence on the heart. However, the amines are present in significant amounts only in the flowers and are largely broken down following intestinal absorption.

Antioxidant activity on hepatic microsomal preparations has been demonstrated (in-vitro) and has beenattributed to the total phenolic content, particularly epicatechin and procyanidin B-2. In China, research has shown C. pinnatifida to induce SOD in mice. [729]

Crataegus flower extract inhibits thromboxane A_2 in vitro.

Medical actions: positive inotropic, cardioprotective, cardiac trophorestorative, astringent, diuretic Increases coronary blood flow, reduces myocardial oxygen demand, protects against myocardial damage.[730]

Medical Indications: moderate HTN, arrhythmia, angina, tachycardia, SOB, cardiac insufficiency, anemia, valvular insufficiency, menopause

Traditional Medicinal Uses:
The specific indications for Crataegus are: "Cardiac weakness, with valvular murmurs, sighing respiration, or other difficult breathing, especially when associated with nerve depression or neurasthenia; mitral regurgitation, with valvular insufficiency; cardiac pain; precordial oppression, dyspnea; rapid and feeble heart action; marked anemia, associated with heart irregularity; cardiac hypertrophy; and heart strain, due to over-exertion or accompanying nervous explosions." [731]

Current Medicinal Uses:

In addition to the uses described below, the flowers and berries of Crataegus have been used for sore throats as an astringent and as a diuretic in kidney problems.

- Cardiovascular Conditions: Crataegus is often referred to as "food for the heart" and is an excellent cardio-tonic. The plant is gentle yet effective. Cardiac indications supported by clinical trials include congestive heart disease due to ischemia, hypertension and cardiac insufficiency.

The flavonoids and procyanidins are the main constituents. Their main effects are improvement in coronary circulation, increased nutrition and energy stores of the myocardial cells, increased intracellular Ca^{2+} stores, and inhibition of phosphodiesterase causing increased cAMP levels. By increasing myocardial cAMP through inhibition of PDE, Crataegus prolongs the effective refractory period compared to inotropic drugs, which tend to shorten it. Also, current research suggests that he mechanism is through modulation of Na/K channel function. The heart tends to slow. However, current research that the effect of Thus, Crataegus has antiarrhythmic potential, especially as long-term therapy for extra systolic arrhythmias.

Given the actions stated previously, Crataegus is beneficial in the treatment of senile heart (degeneration of cardiac mm.), coronary artery disease., angina pectoris, cardiac arrhythmia prevention, and weakness of the myocardium after infectious diseases. Crataegus has also been demonstrated to have a cardioprotective effect on the ischemic-reperfused heart.

In regard to hypertension, hypertensive hearts Crataegus lowers blood pressure by dilating larger vessels, inhibiting angiotensin converting enzyme, increases the functional capacity of the heart, and acting as a mild diuretic. Crataegus has a partial β-antagonistic effect as well. In an uncontrolled trial mean systolic pressure fell from 205 mm Hg to 148 mm Hg and mean diastolic pressure fell from 112 mm Hg to 83 mm Hg in hypertensive patients receiving Crataegus berry tincture. [732]

A clinical study of 80 cardiac patients in Japan demonstrated statistically significant improvement in cardiac function, edema, and dyspnea with an extract of Crataegus flowers and leaves.[733]

Crataegus has a long history of use in the treatment of congestive heart failure, particularly in combination with herbs containing cardiac glycosides (e.g. Digitalis purpurea, Slencereus grandifloris, Convallaria majalis). It potentiates the action of the cardiac glycosides, presumably via its ability to inhibit cAMP-PDE and to interact with calcium channels. Because of this enhancing effect, lower doses of cardiac glycosides can be used. For mild to moderate cases of CHF, crataegus extract used alone may be sufficient, but for moderate to severe CHF, it should be used in combination with other cardiac glycosides. There has been a significant amount of solid research regarding the use of Crataegus as a treatment for congestive heart failure. Between 1981 and 1994, 14 controlled clinical studies of Crataegus were performed, most of them double-blind.[734,735] In all, 741 people participated in these trials. The cumulative results strongly suggest that Crataegus is an effective treatment for congestive heart failure. Comparative studies suggest that Crataegus is about as effective as a low dose of the conventional drug captopril. [736]

- Connective Tissue Conditions: OPC's have been demonstrated to be highly effective in stabilizing collagen in vitro by strengthening cross-links between collagen chains. (other OPC containing botanicals are grape seed and pine)
- Dermatologic Conditions: In an uncontrolled trial with 50 patients demonstrated that application of a liposome containing extract reduced inflammation and improved skin health. [737]
- Metabolic Effects: Crataegus has demonstrated protective action against diet-induced hypercholesterolemia by increasing bile acid excretion and depressed hepatic alcohol synthesis (in-vivo). [738] Crataegus appears to block LDL receptors in the liver.

Crataegus stimulates digestive enzymes while decreasing oxygen and energy demands resulting in decreased free fatty acids and lactic acid. Thus, Crataegus is anabolic in regard to metabolism.[739]

- Topical Applications: Topical applications have shown inhibition of ornithine decarboxylase in experimental models of skin tumor promotion.

Pharmacy: Crataegus is safe for long-term use requiring a minimum of 2 weeks to become apparent. Most of the medicinal effects of Crataegus are apparent only after long-term use. Crataegus is often used as adjunct therapy in many conditions for long term use.

dried/fresh leaf, flower or fruit (or a combination of all three): 1.5-3.5 g dry (3x if fresh) infusion or decoction, depending on part used (internal or external use)
1:2 fluid extract (berry, leaf): 3-6 ml qd (internal or external use)
1:5 tincture (berry, leaf): 7-15 ml qd (1 tsp tid)
*Higher doses than these may be necessary for effective control of HTN
4:1 Solid extract: ¼ tsp qd to tid.
½ tsp bid for valvular insufficiency, coronary insufficiency (maintenance for life- Mitchell)
Standardized extract: 625 mg standard
IV administration: decreases blood pressure, experimental arrhythmia and increased peripheral blood flow to skeletal muscle.[740]

Drug Interactions:

- Crataegus may act synergistically with cardiac glycosides and β-blockers which may require modification of medication dosage although adverse toxic effects usually do not occur. Crataegus enhances the activity of cardiotonics such as Convallaria, Digitalis, Adonis, digitoxin, digoxin and g-strophanthin in animal studies due to its procyanidins. However, it reduces the toxicity of these glycosides by its coronary vasodilatory and anti-arrhythmic effects.[741]

Contraindications: Given that Crataegus is hypotensive and bradycardic, use in these conditions is contraindicated.

Toxicity: Generally well tolerated. The flavonoids may demonstrate a weak mutagenicity in the Ames test.

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[731] Felter, W, *The Eclectic Materia Medica, Pharmacology and Therapeutics*, Eclectic Med. Publ, Sandy, OR, 3rd reprint 1994, originally published 1922. p. 326

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[736] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[737] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 445

[738] Murray, M., Pizzorno, J. The Textbook of Natural Medicine, 2nd ed. Churchill Livingstone. 1999 p.

[739] Holmes, Peter. Energetics of Western Herbs, Vol. 1. Artemis Press. 1989 p. 259-260

[740] Mills, Simon and Bone, Kerry. Prinicples and Practice of Phytotherapy: Modern Herbal Medicine. Churchill-Livingstone 1999 p 442

[741] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 83

Cucurbita pepo — Cucurbitaceae

Common name: pumpkin

Habitat: [742]

- Indigenous to America and is wildly cultivated especially in temperate climates.

Botanical description: [743]

- Flower: yellow, monoecious, very large and solitary in the leaf axils. Male flower has a longer pedicle. Calyx is fused to the corolla, exc. for 5-awl-shaped tips. Corolla is 5-tipped and funnel-shaped. Interior is pubescent. Three stames are fused to the anther. Ovary is inferior and 3-locular.
- Fruit: large with many seeds. Flesh is fibrous, yellow-orange to white and has a viscous placenta. Seeds are 7-15mm long, narrow, broad, or narrow-ovate with shallow grove and flat ridge around the margin.
- Leaves, Stem and Root: annual plant 3-8 m long with decumbent or climbing, sharply-angular with longitudinal grooves and with hairy spines. Leaves are alternate, very large and bristly, periolate 5-7 lobes from a cordate base.

Part used: seeds

Energetics:

Constituents: [744]

- Oil (linoleic)
- Amino acids
  - Curcibitacins
  - Tyrosine
  - Tryptophan
  - GABA
- Kaempferol
- Beta sitosterol
- Chorophyll pigments
- Selenium, Zinc
- Other vitamins, minerals

Pharmacology:

- Three major groups of active compounds: essential fatty acids, amino acids, and vitamins. It is likely that the effects of Curcuma are based on a synergism between constituents. Research on fatty acids derived from other sources has suggested they are anti-inflammatory and help lower levels of fats in the blood. However, research specifically showing these effects in humans is scarce. [745]
- Pharmacodynamic activity has been ascribed to beta-sitosterol, cucurbitacins (not present in other species), and tocopherols. They increase tonicity or the bladder muscles, combined with relaxation of the sphincter mechanism.[746]
- Pumpkin seed oil extracted by CO2 in supercritical conditions has been shown to inhibit 5-alpha reductase in the conversion of testosterone to dihydrotestosterone as well as the binding of androgens to cellular receptors. The prostatic prostaglandin content was also significantly decreased in pharmacological studies.[747]
- Anthelmintic effect – mechanical. [748] Pumpkin seeds paralyze the tapeworm and do not kill it.[749]

Medical actions: Anthehelmintic[750]

Traditional Medicinal Uses:

- Folk medicine: kidney inflammation, intestinal parasites (particularly, tape worm) and vulnary. [751]
- Emulsion of seeds in water acts transiently on kidneys, bladder, and urethra, and may be used in scalding urine and gonorrhea. It is also an effective remedy for tapeworms as reported by some physicians. [752]

Current Medical Uses:

- Genitourinary system:
  - BPH: Irritable bladder and micturition associated with BPH stages 1 and 2.[753] Pumpkin seed oil has been used in combination with saw palmetto in two double-blind studies to effectively reduce symptoms of BPH. Researchers

have suggested the zinc, free fatty acid, or plant sterol content of pumpkin seeds might account for their benefit in men with BPH, but this has not been confirmed. Animal studies have shown that pumpkin seed extracts can improve the function of the bladder and urethra; this might partially account for BPH symptom relief. Pumpkin seed oil extracts standardized for fatty acid content have been used in BPH studies in the amount of 160 mg TID with meals.[754,755,756]

Pharmacy:

- Seed:
  - 20g/day of whole and coarsely ground seed and other galenical preparations for internal uses[762]
  - 10g coarsely ground or well chewed seed taken with fluid (Commission E)[763]
  - 1-2 heaping Tbsp (15-30g) coarsely ground or well chewed seed taken with fluids BID (German Standard License) [764]
- For anthelmintic effect:
  - 60g seeds beaten with equal amounts of sugar and milk, or water, added to make a pint. Sig: 3 doses q2hrs fasting, followed by castor oil few hours after the last dose. [765]
  - 30 g seeds in emulsion with sugar, gum Arabic and water. Sig: am on empty stomac. If no result is seen, follow by cathartic on 2nd and subsequent days.[766]
  - 20-60 gtt oil. Has been combined with oil of male fern.[767]
  - 200-400g of unpeeled ground seed mixed with milk or honey to a porridge-like consistency. Sig: am on empty stomach, followed by castor oil 2-3 hrs later. [768]

Toxicity:

- Safe in pregnancy, liver dz, kids and decreased health[771]

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[742] *PDR for Herbal Medicines,* 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p. 618.

[743] Ibid.

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[748] David Hoffman, *The Holistic Herbal: A Herbal Celebrating the Wholeness of Life*, 3rd ed., Element, Shaftesburry, Dorset, 1990, p. 225.

[749] Weiss, p. 120.

[750] Hoffman, p. 225.

[751] *PDR*, p. 619.

[752] W. M. Cook, *Physio-Medical Dispensatory: A Treatise on Therapeutics, Materia Medica, and Pharmacy*, Eclectic Medical Publications, 1985. p. 387.

[753] Mark Blumenthal et al (eds.), *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, American Botanical Council, Austin, Texas, 1998, p.193.

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[759] Suphakarn et al, pp. 115–21.

[760] Hoffman, p. 225.

[761] Weiss, p. 120.

[762] Mark Blumenthal et al (eds.), *Herbal Medicine: Expanded Commission E Monographs,* American Botanical Council, Austin, TX, 2000, p.324.

[763] Ibid.

[764] Ibid.

[765] Hoffman, p. 225.

[766] W. M. Cook, *Physio-Medical Dispensatory: A Treatise on Therapeutics, Materia Medica, and Pharmacy*, Eclectic Medical Publications, 1985. p. 387.

[767] Ibid, pp. 387-8.

[768] Weiss, p. 120.

[769] Mark Blumenthal et al (eds.), *Herbal Medicine: Expanded Commission E Monographs,* p. 324.

[770] Ibid.

[771] Weiss, p. 119.

Curcuma longa

Zingiberaceae (Ginger family)

This monograph is largely adapted from: Snow JM, "Curcuma longa", *The Protocol Journal of Botanical Medicine*, 1(2),Autumn 1995, 43-46 & Murray, M, "Curcumin: A potent anti-inflammatory agent", *The American Journal of Natural Medicine*, 1(4), Dec. 1994:10-13.

Common name: Turmeric, Khamin, Acafrao, Ukon, Haldi, Haridra (Sanskrit), Jiang Huang (Chinese).
(Note: Do not confuse w/ C. xanthorrhiza, which is Curcuma – not Turmeric.)

Habitat: Turmeric is native to India, China, Indonesia & other parts of the tropics.

Botanical description: C. longa is a tall perennial w/o stems. The rhizome is fleshy, palmate, w/ an orange interior. The leaves are light green (30-40cm long & 8-10 cm wide) w/ long petioles. The leaf blades are lanceolate. The inflorescence is cylindrical, 10-15 by 5-7 cm, & arises directly from the center of the leaves. Curcuma has multiple yellow flowers.

Parts used: Rhizome.

Energetics: Taste - Bitter, astringent, pungent. Heating in action. (-) Kapha. (+) Vata & Pitta in excess. Affinity for all tissues of the body, esp. focus upon the GI, circulatory & respiratory systems.[772]

Identified Constituents:

- Curcuminoids: including Curcumin (diferuloylmethan), monodesmethoxycurcumin, bisdesmethoxycurcumin, cyclocurcumin, demethoxycurcumin. Curcumin is considered the most active constituent in C. longa.
- Volatile Oils: Sesquiterpenes [alpha- & beta-turmerone, artumerone, alpha- & gamma-atlantone, curlone, zingiberene, curcumol.]
- Other constituents: Startch [uconan A, ukonan B, ukonan C]; Protein; Caffeic acid.[773]

Pharmacology:

- **Anti-oxidant:** The constituent curcumin can protect DNA against single strand breaks induced by single oxygen.[774] Curcumin is lipophilic (fat soluble), however water-soluble extracts have also demonstrated significant anti-oxidant activity; comparable to vitamins C (slightly weaker than C), E (slightly stronger than E) & BHA (butylated hydroxyanisole). Curcumin is bright yellow in color & thus is used as an antioxidant in butter, margarine & cheeses. Water-soluble turmerin - like its fat-soluble counter-part curcumin - has also been found to have: anti-oxidant, DNA protectant & anti-mutagenic properties.[775]
- **Anti-inflammatory:** Curcumin appears to be primarily responsible for the anti-inflammatory action of Turmeric. When administered orally, curcumin inhibits neutrophil function, inhibits platelet aggregation, inhibits lymphocyte activity, promotes fibrinolysis, & stabilizes lysosomal membranes.[776] [777] Sodium curcuminate (a form of turmeric obtained form mixing turmeric with slaked lime) is the most effective as an anti-inflammatory agent.[778] Curcumin is exerts its antiinflammatory actions topically via the mechanisms mentioned above with additional counter-irritant activity which will deplete nerve endings of substance P (neurotransmitter of pain).[779]
- **Lipid Modulation:** Orally dosed turmerin & curcumin extracts decrease total cholesterol, LDL cholesterol & increase HDL cholesterol in humans.[780] Curcumin interferes with intestinal cholesterol-uptake by increasing the conversion of cholesterol into bile acids via: stimulation of hepatic cholesterol-7-alpha-hydroxylase (the rate limiting enzyme in bile acid synthesis) & through increased bile acid secretion.[781] [782]
- **Anti-platelet:** Turmerin & curcumin inhibit platelet aggregation by inhibiting the formation of thromboxanes (promotes aggregation) & increasing prostacylin (inhibits aggregation).[783]

Medicinal actions: Anti-inflammatory, Anti-oxidant, Anti-neoplastic, Anti-hepatotoxic, Choleretic, Anti-cholesterolemic, Antagonist of Platelet Aggregating Factor (PAF), Carminative, Stimulant, Alterative, Anti-bacterial, Vulnerary.

Current & Traditional Medicinal Use:

- Turmeric has many clinical applications. It has been used internally for liver & digestive complaints, dysmenorrhea, jaundice, & as an antiinflammatory agent.
- **Historical use**: Turmeric has been used throughout India, China & Indonesia as a spice & medicinal agent. Turmeric has been applied to wounds, bruises, sprains, leech bites & inflammed joints.
- **Ayurvedic usage:** Indicated for: indigestion, poor circulation, cough, antibacterial pharyngitis, skin disorders, diabetes, arthritis, anemia, wounds, & bruises. Tumeric is a natural antibiotic that strengthens digestion & improves intestinal flora, esp. in those chronically weak or ill. Tends to purify the blood as well as stimulate the formation of new blood tissues. Tumeric is thought to help cleanse the chakras, purify the channels & help to stretch ligaments, hence its use for those who practice Hatha Yoga. Tumeric supports proper metabolism in the body, balancing excesses & deficiencies, as well as aiding the

assimilation of protien. External application, w/ the addition of honey, is used for sprains, strains, bruises or itch. As a milk decoction, it is tonic to the skin.[784]

- **Cardiovascular Conditions:** The effects of Turmeric on the cardiovascular system include inhibition of platelet aggregation & lowering of cholesterol.[785,786] These properties are important for preventing & treating atherosclerosis & its complications.
- **GI Conditions:** Because of its ability to stimulate the gall bladder, turmeric has been used as a treatment for dyspepsia (indigestion).[787,788,789,790, 791] In Europe, gallbladder dysfunction (or the lack of bile) is thought to be the main cause of dyspepsia. Tumeric was considered similar to ginger as a stimulant, although Tumeric was thought to be generally more bitter & tonic. At one time it was enjoyed as a cordial, as a stomachic in jaundice. However, its action was considered too transient to be of much use as an adjuvant to tonic remedies. It was rarely employed, except to color tinctures, liniments, & ointments.[792]
- **Cancer:** Clinical studies with humans demonstrated the anti-cancer effects are few & the results suggest that turmeric is best used as an adjunctive treatment. A decrease in urinary mutagens in smokers[793] & a reduction in the symptoms of ulcerating oral & cutaneous squamous cell carcinomas in persons unresponsive to standard treatments[794] are the most promising clinical trials.

Current Research Review

- **Gastroenterology**:
  - **Peptic ulcer:** [795]
    - Design: Phase II clinical trial
    - Patients: Forty-five patients with peptic ulcer disease.
    - Therapy: Turmeric, 300 mg 5x/day (30 min-1 hr ac, 4 pm, and hs) x 4, 8, and 12 weeks.
    - Results: Ulcers were absent in 48% or 12 cases (DU 9 and GU 3). Eighteen cases (DU 13 and GU 5) had absence of ulcer after 8 weeks of treatment. Nineteen cases (76%) (DU 14 and GU 5) did not have ulcers after 12 weeks of treatment. The rest, 20 cases were not found to have ulcers and some were not endoscoped. They appeared to have erosions, gastritis and dyspepsia. They received turmeric capsules for 4 weeks of treatment. The abdominal pain and discomfort satisfactorily subsided in the first and second week. They could take normal foods instead of soft meals. Blood chemistry and hematology of all 54 patients had no significant changes in hematological system, liver and renal functions both before and after treatment..
  - **Biliary dyskinesia:** [796]
    - Design: Placebo-controlled double-blind clinical trial
    - Patients: Seventy-eight patients
    - Therapy: Cholagogum F Nattermann (containing dried extracts from Scholkraut and Curcuma) x 3 weeks
    - Results: Reduction of dumpy and colicky pain in the 1st week of treatment was faster than in placebo group with no side effects.
- **Infectious diseases:**
  - **Scabies:** [797]
    - Design: Clinical trial
    - Patients: Eight hundred fourteen patients with scabies
    - Therapy: Azadirashta indica ADR and Curcuma longa topically as a paste x 3-15 days
    - Results: 97% cure rate without any adverse reactions
- **Rheumatology:**
  - **Osteoarthritis:** [798]
    - Design: Placebo-controlled clinical trial
    - Patients: Forty-two patients with osteoarthritis
    - Therapy: Herbomineral formulation containing roots of Withania somnifera, the stem of Boswellia serrata, rhizomes of Curcuma longa, and a zinc complex (Articulin-F) x 8 months
    - Results: Significant drop in severy of pain and disability score in the patients with osteoarthritis. Radiological assessment did not show any significant changes
  - **Rheumatoid arthritis:** [799]
    - Design: Double-blind controlled clinical trial
    - Patients: Patients with rheumatoid arthritis
    - Therapy: Curcumin, 120 mg qd or Phenylbutazone.
    - Results: Curcumin significantly helped to relieved the symptoms of rheumatoid arthritis, however, phenylbutazone was found to be superior, probably because it also has analgesic activity.
- **Immunology:**
  - **Post-operative inflammation:**[800]

- Design: Double-blind placebo-controlled clinical trial
- Patients: Post-operative patients
- Therapy: Curcumin, 1,200 mg qd, phyenolbutazone, or placebo
- Results: Curcumin was found to be more effective than phenylbutazone or placebo.

- **Cardiology:**
  - **Hyperlipidemia and angina pectoris:**

    Study 1: [801]
    - Design: Uncontrolled clinical trial
    - Patients: Sixteen patients with hyperlipidemia and angina pectoris.
    - Therapy: Turmeric extract in the dose equivalent 50g turmeric qd x 12 weeks
    - Results: Turmeric was effective in the lowering of plasma cholesterol levels by 49 mg/dl (1.3 mmol.l) and triglycerides by 62 mg/dl. Symptoms of angina pectoris were ameliorated as well.

    Study 2: [802]
    - Design: Clinical trial
    - Patients: Ninety patients with hyperlipidemia and angina pectoris
    - Therapy: Turmeric
    - Results: Turmeric was effective in the lowering of cholesterol and triglycerides, as well as reducing the symptoms of angina pectoris.

Pharmacy:

- Liquid extract (1:1 45% EtOH or higher): 5-14 ml QD in 4-5 equal doses. [803]
- Powdered herb: 4 g (heaped teaspoon) mixed with water QD-BID, can add 1 tsp lethicin to improve absorption. Powdered herb may be better for anti-inflammatory effects.[804]
- Note: curcumin is not well absorbed orally (40%-85% is absorbed) & taking equal amounts of bromelain with it or taking the curcumin in a lipid base will possibly enhance its absorption.[805]

Contraindications/Toxicity:

- According to empirical evidence, Curcuma should be avoided in bile duct obstruction, stomach ulcers, hyperchlorhydria & pregnancy & caution is advised in gall stone treatment; however, in regard to stomach ulcer, Curcuma reduced ulcers induced by reserpine & indomethicine. [806]
- Precaution in cases of acute jaundice & hepatitis, high Pitta, & PG.[807]
- There have been no reports of toxicity at standard dosage levels. The LD50 has not been established because huge amounts fed to rats fail to produce mortality or chromosomal changes in teratology tests. At high doses (i.e. 100 mg/kg body weight) in rats, curcumin is ulcerogenic.[808]

Stomach complaints may result with extended use or in cases of overdose.[809] About 10-15% of patients may experience GI distress.[810]

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Cynara scolymus

Common name: artichoke

Habitat:

Botanical description:

Part used: leaf

Historical use:

Energetics: No information is currently available

Constituents:

- Caffeic acid derivatives: cynarin, 1,3 dicaffeoylquinic acid, 3-caffeoylquinic acid, and scolymoside.
- Flavonoids: in particular rutin and Luteolin
- Sesquiterpene lactones: cynaropicrin, dehydrocynaropicrin, grossheimin, cynaratriol

Pharmacology: The choleretic (bile stimulating) action of the plant has been well documented in a placebo-controlled trial involving 20 healthy volunteers. After the administration of 1.92 grams of standardized artichoke extract directly into the duodenum, liver bile flow increased by 127.3% and 151.5% at the 30- and 60-minute mark, respectively. [811] Artichoke leaf may work by interfering with cholesterol synthesis. Besides cynarin, a compound in artichoke called luteolin may play a role in reducing cholesterol.[812]

Medicinal actions: Diuretic, alterative, choleretic

Traditional Medicinal Uses:
Reputed very beneficial in dropsies (edema), and has been efficient in rheumatism, gout, jaundice, tic-douloureux, etc. It was described in the Lancet, 1843.[813]

Current Medicinal Uses:

- **Gastrointestinal Conditions:**
  - **Constipation and indigestion**:[814, 815,816,817] In a study persons suffering from non-specific digestive disorders (including dyspepsia and indigestion), 320–640 mg of a standardized artichoke extract given three times a day was effective in reducing nausea, abdominal pain, constipation, and flatulence in over 70% of the study participants.[818]
  - **Fatty liver of "sluggish liver":** Cynarin caused an increase in fecal bile acid excretion in a small study on healthy volunteers and four patients with fatty liver. Other studies support its use as a choleretic. [819]
- **Cardiovascular Conditions:**
  - **Hyperlipidemia:** The results of studies using artichoke for high cholesterol have been mixed. A study using cynarin at a daily amount of either 250 mg or 750 mg concluded that it did not alter cholesterol and triglyceride levels in patients with familial high cholesterol after three months of therapy. A recent open-label suggests that artichoke can alter lipid levels. Patients took a standardized artichoke extract (320 mg/capsule) one to two capsules TID for six weeks, total cholesterol and triglyceride values decreased significantly by an average of 11.5% and 12.5%, respectively. HDL-cholesterol levels did not rise significantly. The results of this study must be questioned because of the lack of dietary control and the lack of a placebo group.[820] According to a well controlled study performed in 2000, in 143 individuals with high cholesterol, artichoke leaf extract significantly improved cholesterol readings. Total cholesterol fell by 18.5% as compared to 8.6% in the placebo group; LDL cholesterol by 23% vs. 6; and LDL to HDL ratio decreased by 20% vs. 7%. [821]

Current Research Review: (Source: Medline)

- **Cardiology:**
  - **Hyperlipidemia**:
    Study 1: [822]
    - Design: Clinical trial.
    - Patients: Seventeen ambulant outpatients with familial Type IIa or Type IIb hyperlipoproteinaemia.
    - Therapy: Cynarin, the 1,5-dicaffeyl ester of guinic acid, the constituent of Cynara scolymus. Sig 250 mg and 750 mg qd.

- Results: The mean serum cholesterol and triglyceride concentrations were not significantly changed within 3 months. It was concluded than Cynarin, administered per os, has no hypolipidaemic effect in familial Type II hyperlipoproteinaemia.

Study 2:[823]

- Design: Double-blind, randomized, placebo-controlled, multi-center clinical trial.
- Patients: One hundred and forty three patients with hyperlipoproteinemia with initial total cholesterol of >7.3mmol/l (>280mg/dl).
- Therapy: Dry extract of artichoke (Drug/extract ratio 25-35:1, aqueous extract, CY450) as coated tablets, 450 mg extract/tablet (tradename: Valverde Artischoke bei Verdauungsbeschwerden)
- Results: Decrease in total cholesterol was 18.5% in the experimental group, compared to 8.6% in placebo group. LDL-cholesterol decrease was 22.9% in the experimental group vs 6.3% in placebo group. LDL/HDL ratio decrease by 20.2% in the experimental group vs 7.2% in placebo group. No adverse effects were observed.

- **Platelet aggregation:**[824]
  - Design: Clinical trial
  - Patients: Sixty two men producing artificial fibres and chronically exposed to carbon disulfide.
  - Therapy: Cynarex (artichoke extract preparation produced by the Herbs Plant, Herbapol' in Wroclaw) x 2 years
  - Results: Platelets ability to aggregate, spontaneously or by induction, was found to be statistically significantly reduced. The spontaneous aggregation after two years of administration was reduced by ~51%.

- **Gastroenterology:**
  - **IBS**:[825]
    - Design: Post-marketing surveillance study
    - Patients: IBS patients with dyspeptic syndrome
    - Therapy: Artichoke leaf extract (ALE) x 6 weeks.
    - Results: Significant reduction in the severity of symptoms and favorable evaluation of overall effectiveness by both physicians and patients. Ninety-six percent of patients rated ALE as better or at least equal to previous therapies.

Pharmacy:

Contraindications: According to empirical evidence, Cynara should be avoided in bile duct obstruction due to its cholagogue effect.[826]

Toxicity: No information is currently available.

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Datura stramonium

Solanaceae

Common name: Jimson weed, devil's apple, stinkweed, angel's trumpet

Habitat: Datura stramonium is native to the SW region of the United States, Mexico, Central America, India, and Asia. It grows in sandy soil in flat, open lowlands.

Botanical description: It is an annual herb that branches freely. It grows up to 3 feet in height. The leaves are large, angular, with coarsely toothed margin. The large flowers are encased in a calyx. The flowers are 3 in. long and tubular and swollen bellow ending in five very sharp teeth. The corolla is white and half-opened in a funnel shape. The flowers contain black, flat, kidney-shaped seeds.

Parts used: Leaves, flowering tops, seeds

Historical Use: Datura is has historical use as a hallucinogenic herb. It is has been used to aid in out of body experiences. Witches would include Datura as part of their flying ointment which was rubbed over their bodies (the ointment was black in color, hence the association of black body paint and clothing with witches) and was also rubbed onto wooden handles, i.e. broomsticks and inserted into the vagina for increased absorption (hence the popular romanticism of witches flying on broomsticks).

Datura fatuosa was employed in India by a brotherhood of thieves and murderers—the Daturiahs, who waylaid and strangled their victims or placed the powdered seeds mixed with flour into food.

Datura continues to be used by certain indigenous healers in Central American and southwestern United States to aid in shamanistic voyages.

Constituents

Leaf:

- Tropane alkaloids (0.1-0.65%): chief alkaloids (-)-hyoscyamine, under drying conditions changing over to some extent into atropine, and scopolamine (ratio 4:1), furthermore including, among others, apoatropine, belladonnine, tigloylmeteloidin
- Flavonoids
- Hydroxycoumarins: including, among others, umbelliferone, scopolin, scopoletin
- Withanolide*:* including, among others, withastramonolide

Seed:

- Tropane alkaloids (0.4-0.6%): chief alkaloids (-)-hyoscyamine, under drying conditions changing over to some extent into atropine, and scopolamine (ratio 4:1).
- Indole alkaloids (ß-carboline type): including, among others, fluorodaturin (very fluorescent).

Pharmacology: In the parasympathetic nervous system atropine and hyoscyamine blocks the muscarinic cholinergic receptors causing central nervous system stimulation followed by depression. The alkaloids also cause hallucinogenic and hypnotic effects (lowered brain activity during which time deep sleep does not occur, but dreams do).

Atropine is a CNS stimulant with a tropism for the heart, lung and abdominal organs. In the peripheral nervous system, the anticholinergic actions include reduction of gastrointestinal secretions and motility as well as relaxation of bronchioles and skeletal muscle.

In contrast, Hyoscine does not stimulate the central nervous system and is in fact a CNS sedative, which may be helpful in allaying motion sickness. It has a greater influence on the eye and secretory glands. Both atropine and hyoscine will dilate the pupil of the eye when prepared into ophthalmic eye drops.

Medicinal actions: Spasmolytic, antiasthmatic, anticholinergic, hallucinogenic, anodyne

Traditional Medicinal Use:

Specific Indications and Uses: Delirium, furious, enraged, and destructive; continuous talking; restless, can not rest in any position, seems to be fearful; pain, especially when superficial and localized; spasm, with pain; cerebral irritation; bloating and redness of face; purely spasmodic asthma; convulsive cough.[827]

The physiological action of Datura was observed to be practically the same as that of Atropa, though it was thought to "influence the sympathetic nervous system" more strongly with higher doses resulting irregular heart-action and greater ability to induce greater delirium. Full doses of it were said to increase the sexual appetite and power. The alkaloids from Datura, though chemically similar to Atropa, were seen to produce a more profound effect than Atropa, being more liable to produce depression, heart failure, and unconsciousness.

In medicinal doses, Datura was used as an anodyne antispasmodic similar to Hyoscyamine and Atropa. However, it was observed to be different in some of its therapeutic effects, particularly in regard to pain. While less effective than Atropa for the relief of pain, it was

still used employed in similar neuralgic conditions with nervous irritation as a component as well as spastic conditions of the uterus and gastrointestinal tract.

- Behavioral and Psychological Conditions: In turn, Datura was considered more effective in mental disorders than Atropa.

It has long borne a reputation as a remedy for acute delirium and acute mania where the patient presented as violent, boisterous, angry, and possessed a destructive tendency. Such delirium was observed to occur as a consequence of inflammatory processes, particularly in zymotic diseases. It was often a remedy of value in hysterical mania with convulsions, alternate laughing and weeping, and where there headache, flushed face, and sexual irritation were also present.

- Infectious Conditions: For retrocession of the eruptions in the exanthemata, Datura was considerable value along with Atropa, though is was considered less efficient than Atropa.
- Neurological Conditions: For deep-seated pain, as in deep neuralgic pain, Datura was considered far less effective than Atropa, but for superficial neuralgia, when locally applied, it was the more effective plant.

Datura has been lauded for vertigo and headache, secondary to hyperacidity of the stomach. Its indication was considered specific when gastric headache was accompanied with marked nervous erethism and unsteadiness.

Datura was also used for muscular tremblings of the hands of functional or reflex origin, and associated with great restlessness. Similarly to Atropa, Datura was observed to not readily produce sleep, but to alleviate pain or nervous irritability resulting in sleep.

- Pulmonary Conditions: Datura was indicated in cough, with constriction, difficult deglutition and impaired innervation. It was used for temporary relief in purely spasmodic asthma, but was ineffective when dyspnoea or asthmatic breathing occurred secondary to primary pulmonary or cardiac diseases.

Datura was a useful remedy in the severe paroxysms of whooping-cough and in hemoptysis brought on by fits of coughing or by spasm.

- Topical Applications: Externally, a poultice of the fresh, bruised leaves or the dried leaves in hot water was found to be an excellent application in severe forms of gastritis, enteritis, peritonitis, acute rheumatism, painful bladder affections, pleurisy, etc.

In cases of urine retention from enlarged prostate where it was impossible to introduce a catheter, the topical application was left in place for 30 minutes at which time a catheter was then able to pass.

The topical application was found beneficial as a local medication to all painful ulcers, swelled breasts, orchitis, parotitis, and other glandular inflammation, inflammatory rheumatism, and irritable hemorrhoidal tumors. The ointment was found exceedingly effective in treating cutaneous hypertrophy around the anus with pruritis or sero-purulent secretion.

Current Medicinal Use:

Datura has respiratory tropism. It is used in treatment for Parkinson's disease. Compared to Atropa, Datura lends to less cerebral excitement.

- Respiratory Conditions: If ingested Datura may reduce bronchial spasms of asthma, although it was more commonly smoked for this purpose. (note: smoking anything is generally not indicated for asthma).
- Gastrointestinal Conditions: The anticholinergic effects can be used medicinally to control diarrhea or to reduce salivation (as in excess salivation with Parkinson's disease).
- Pain Conditions: Datura can be used as an anodyne antispasmodic. Datura is not as effective as Belladonna for this purpose, however, if applied topically over an area of neuralgia, it will prove pain relief as well as reduce swelling.
- Pulmonary Conditions: Indications for respiratory spasmolytics include tight, breathless, non-productive coughing as well asthmatic symptoms such as wheezing.[828]

Pharmacy: Datura may require months for Parkinson's disease. A conservative approach is to start with a smaller amount and increase daily by a drop until the effective dose is reached. Mills and Bone indicate that the solanaceous plants should not be used long term.

1:10 tincture: 0.6 ml per day
Smoked: less than 2 gm; less than once per week

Drug Interactions: No information is currently available from the selected resources.

Contraindications: The solanaceous plants may be inappropriate in glaucoma, urinary retention, paralytic ileus, intestinal atony and obstruction, tachycardia, arrhythmia, and BPH.

Toxicity: Acute: nausea, thirst, dilated pupils, vomiting, impaired vision, dry skin and mucous membranes, staggering, dizziness, incoherence, hallucinations, loss of consciousness, weak rapid pulse, inability to urinate, convulsions, delirium with laughter, loquacity and violence, circulatory collapse prior to death.[829]

Chronic: Datura can be detrimental to the heart because of the tropane alkaloids. A tolerance is built up to the tropanes in the parasympathetic system, thus requiring more Datura to achieve its effects. However, the heart does not build up tolerance and therefore may be damaged.[830]

In large doses, stramonium is an energetic, narcotic poison, producing dryness of the throat, thirst, nausea, giddiness, nervous agitation, dilatation of the pupil, obscurity of vision, headache, disturbance of the cerebral functions, perspiration, occasional relaxation of the bowels, and, in some cases diuresis (R). When about to prove fatal, maniacal delirium, loss of voice, dryness of throat, etc., are usually present.

Digitalis purpurea

Scrophulariaceae

Common name: Foxglove

Habitat: Digitalis grows along the Pacific Coast in the United States and in Columbia.

Botanical description: Biennial plant that grows 2-5 feet tall. The plant flowers from June to September. The flowers are bell shaped, are rose to purple on the outside and whitish with red spots on the inside.

Part Used: Leaves

Constituents:

- Cardiac glycosides: digitoxin, digoxin, and gitoxin are the most important. Digoxin is refined commercially as the drug Digoxin (Lanoxin).

Medicinal actions: Cardio-stimulant

Traditional Medicinal use:

Specific Uses and Indications: Weak, rapid, irregular heart action, with low arterial tension; weak heart sounds; dusky countenance, jugular pulsation, cough, and dyspnoea; edema; anasarca with scanty, high-colored urine; renal congestion. An antidote to aconite, but slow in its action.[831]

Historically, generalized edema was believed to be only due to renal conditions. The discovery of the cardioactive glycosides of Digitalis enabled the discovery of the cardiac origin of such conditions. King summarized the uses of Digitalis in the following conditions: In structural heart lesions, as dilated heart with mitral incompetence; in mitral stenosis and regurgitation, and in dilated right heart with tricuspid incompetence, and in relative or positive debility of the cardiac muscle. The general symptoms leading to its selection are a weak, rapid, and irregular pulse, low arterial tension, cough, dyspnoea, pulsation of the jugular veins, a cyanotic countenance, deficient urination, the secretion being high-colored, and edema.

According to Felter, Digitalis is indicated in, "weak, rapid, and irregular heart action . . . weak, rapid and flaccid pulse; with dyspnea, cough, jugular fullness. . . edema. . . ascites with scanty supply of dark urine. . .irritable heart with weak action. . . ". [p.333] This describes the symptoms of congestive heart failure (CHF).

Felter identified three stages of the action caused by a continuous increased dosage of Digitalis. In the first stage, the therapeutic stage, the rhythm is slowed and the contractile force of the heart is increased. Diastole is prolonged and the force of systole increases. This action is due to the vagal inhibitory activity and to the direct action on the myocardium. The second stage, the toxic stage, (sometimes absent) occurs when the drug is given continuously without a rest or when given in overdose. In the second stage, there is extreme inhibition of the heart. In this stage, the ventricle dilates thus prolonging diastole and systole becomes erratic. The atria approach failure and there is variance in rhythm between the atria and the ventricles (A-V heart block). This quickly leads to the third stage, the extreme toxic or lethal stage. In the third stage, there is rapid ventricular action and racing pulse. The CNS inhibition of the heart is lost such that the arrhythmia causes insufficient circulation and the heart finally stops in extreme dilation.

Current Medicinal Use: Despite its indication in the treatment of CHF, Digitalis is not commonly used because the therapeutic dose and the toxic dose are so close that both usually occur together. The toxicity of Digitalis has led to the isolation of digoxin which is least cumulative and most rapidly excreted glycoside. The glycosides in Digitalis are the strongest cardiac glycosides known; all other cardiac glycoside containing plants are compared against Digitalis to assess their relative strength. Digoxin exerts strong positive inotropic action on the myocardium (refer to previous discussion on positive inotropic action). In low doses, digoxin exerts a negative chronotropic action, but in increasing dosages, it becomes a positive chronotropic agent. Digoxin (allopathic medication) is used in short-term therapy, whereas intermediate glycosides are indicated in long-term therapy (most herbal remedies).

Pharmacy: The whole Digitalis plant or plant extracts are no longer used. Dosage ranges of allopathic digoxin are variable according to the degree of heart failure and the age of the patient with a typical dosage range of 12 - 35 mcg/kg body weight. The maintenance daily dosage for most patients is between 0.25-0.5 mg once daily.

1-2 g qd of leaf qd as maintenance (Mitchell)

Interactions:

- Certain other substances predispose to Digitalis toxicity, namely: potassium depleting drugs such as diuretics, quinidine, anthraquinone glycoside containing botanicals and corticosteroids. [832]
- Cardiotonic botanicals have an additive effect.
- Crataegus potentiates the action of the cardiac glycosides, presumably via its ability to inhibit cAMP-PDE and to interact with calcium channels. Because of this enhancing effect, lower doses of cardiac glycosides can be used.

- Magnesium has also been shown to augment digitalis action.

Contraindications:
King observed that Digitalis is contraindicated in simple compensatory hypertrophy, aortic stenosis, fatty or other degeneration of the heart muscle, and atheromatous or other structural changes in the arteries. As a rule it should not be employed in the heart affections of old age, or when dilatation is excessive, and particularly when the flabby state of the heart muscle is due to degenerative changes.[833]

Toxicity: Toxicity symptoms develop several hours after ingestion. At first the pulse slows dramatically and upon standing will become erratic and rapid. There is nausea, anxiety, salivation, constriction in the head, giddiness, disordered vision, mental disturbance, vomiting. Persons may remain in this state for several days and may or may not survive. A known antidote to digitalis poisoning is Aconite.

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[832] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 234

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Dioscorea villosa

Dioscoriaceae

Common name: Wild yam, yam, Mexican wild yam, colic root, rheumatism root

Habitat: Wild yam grows in eastern and central United States and in tropical areas.

Botanical description: "The tubers are cylindrical, pale brown, compressed, about10-15 cm long and 1-2 cm thick, curved, branched at intervals, showing stem scars on the upper surface and rootlets on the other. Occurs in commerce as hard, pale yellowish-brown chips of rhizome and narrow, fibrous roots. Fracture short, hard. Taste, insipid at first, then acrid; odorless."[834] The root is harvested in the fall.

Parts used: Root

Identified Constituents: Steroidal saponins based on diosgenin [usually 1%-2%](dioscin, dioscorin, and others), Starch, Alkaloids, Tannins

Medicinal actions: Anti-spasmodic, anti-inflammatory, anti-rheumatic, cholagogue, diaphoretic

Pharmacology: Diosgenin has been commercially processed into progesterone. Until 1970, the diosgenin extracted from Mexican wild yam was the only source for progesterone synthesis. After 1970, largely due to economic factors, progesterone synthesis used the steroidal alkaloids from *Solanum* species or many of the *Dioscorea spp.* plants (*D. opposita* and *D. hypoglauca*) from China. Total synthesis was also developed that requires no starting plant material. Currently, diosgenin is still used as the starting material for pregnenolone, corticosterone, and progesterone. This process requires microbiological fermentation, organic solvent extraction, and acid hydrolysis.

Dioscorea villosa is anti-inflammatory by acting as an autonomic nerve relaxant

Medicinal use: *Dioscorea villosa* is most indicated in inflammatory conditions of the gastrointestinal tract, joints, uterus and ovaries. Wild yam reduces the inflammation and pain associated with intestinal cramping. This may occur as part of inflammatory bowel disease, flatulence, diverticulitis, and nausea and vomiting. Wild yam is particularly useful in relieving the nausea of pregnancy. Dioscorea may also be used to prevent miscarriage (along with Viburnum opulus and Zingiber officinale). Wild yam also exerts anti-inflammatory actions in rheumatoid arthritis or other inflammatory disorders of the joints. Dioscorea can be helpful in allaying the inflammation and spasm of dysmenorrhea, ovarian cysts and torsion. Dioscorea not only reduces the inflammation associated with these conditions but also reduces the smooth muscle spasms that occur. Both of these actions may be the result of altered autonomic nervous stimulation. The anti-inflammatory and anti-spasmodic actions of *Dioscorea villosa* are somewhat specific to the gall bladder. Dioscorea can decidedly relax the gall duct thus aiding the passage of gall stones and gravel. If dosed high enough, this action is quick and significant and may be used in acute painful cholelithiasis and cholecystitis. In smaller doses, the cholagogue effects of wild yam will promote the flow of bile and thus aid in hepatic insufficiency, lipidemia, and hormonal imbalances.

Pharmacy: 1:5 tincture—Chronic: 5 ml TID; Acute: 2.5 ml q ½ hour; weekly maximum dosage 100 ml
1-2 tsp. root/cup water; decoct 15 min; Chronic: 1 cup TID; Acute: ½-1 cup q ½ hour.

Toxicity: None known.

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[834] Wren RC *Potter's New Cyclopedia of Botanical Drugs and Preparations*, (Saffron Walden, Essex, England: The C.W. Daniel Co. Ltd.), 1988:283.

Dryopteris felix-mas (Aspidium filix-mas, Aspidium marginale, Polypodium Filix-mas) — Polypodiaceae

Common name: Male fern, Marginal Shield-fern (Fern Family)

Habitat: Native to Europe, Americas, India, Africa & Asia

Botanical description: The rhizome is reddish-brown, slender & creeping. The root crown is a brown, tangled mass of leaf bases. As these fronds unroll, they attain a length of 2-4 feet. Each frond is wide & spreading, stiff, & lanceolate. The pinnae are alternate, oblong w/ notched edges & a slightly furrowed surface. The sori are on the upper half of the frond, at the back of the pinnules, in round masses towards the base of the segments.

Part used: Rhizome

Actions: Anthelmintic / Vermifuge

Constituents: Phloroglucinol oleoresin derivatives [6.5%-15%] (filicin: filicinic acid, filicylbutanone, aspidinol, albaspidin, flavaspidic acids, paraspidin, desaspidin), triterpenes, volatile oil, resins, sugar, starch, wax, tannins.

Traditional Medicinal Use:

- GI Conditions: Male-fern is used for the expulsion of the tapeworm. [835,836]
- Topical Applications: Decoction can be used as foot bath for varicose veins. A fresh, grated root poultice was used for lymphangitis.*

Current Medicinal use:

- GI Conditions: As a vermifuge, Sheild fern causes live expulsion of tapeworms (esp. of: Bothriocephalus latus & Taenia solium). Flavaspidic acid & desaspidin are the active consitiuents.

Current Research Review:

- Search of Medline revealed no clinical trials as of October 2002.

Pharmacy:

It is customary to give Dryopteris as a single dose at night before bed after a day of fasting. The fluid extract is the most effective preparation, although capsules, while slightly less effective, are more pleasant to take. In the morning, a purgative is given, although castor oil and any fixed oils are avoided since they enhance the absorption [particularly of the filicins (considered muscle poisons)] and toxicity of the Dryopteris. Saline solution, Juglans nigra, or magnesium sulfate are good purgatives to use. Follow with a full meal without fats.

*A decoction of the root is given to expel worms, but must be followed by a purgative, in order to prevent poisioning of the body. Shield fern should never be mixed w/ alcohol.***

A single dose is often sufficient to kill and expel the worm. The therapeutic dosage range is somewhat narrow, with insufficient dosage being ineffective and large doses causing toxicity. It is best to start with smaller doses and, over time, increase the dose to the effective one.

Powdered rhizome (in capsules): 1-10 g; 5 g is normally the highest dose given
Fluid extract: 2.5-5 ml
1:5 tincture: 3-6 ml [Note: alcohol increases absorption and toxicity, therefore tincture is not recommended.]

Contraindications:

Male fern is not to be used with castor oil or fixed oil. According to Brinker, use of Male fern in the following conditions are to be it is to be avoided based on empirical evidence. It is not to be used in pregnancy due to its abortifacient effects and is speculated to be potential toxic to the breastfed infant. It is to be avoided in anemic patients or in the elderly or debilitated subjects due to the impairment in respiration and circulation it may cause. It is to be avoided with stomach and intestinal ulcers due to the mucosal irritants filmaron and filicic acid in the oleoresin. It is to be avoided in heart disorders due to cardiac depressive effects. It is to be avoided in kidney insufficiency or liver disorders due tot he albuminuria and bilirubinuria it has been shown to cause.[837]

Toxicity: The oleoresin has been shown to be poisonous, five fatal cases out of twenty being recorded (Katayama and Okamoto, 1892).[838] N/V, H/A, vertigo, diarrhea, dyspnea, delirium, tremors, cramps, cold perspiration, cyanosis, disordered intellect, profound stupor, and convulsions are among its effects. In some cases amblyopia and permanent amaurosis have occurred, though the vision is generally restored. Cardiac and respiratory failure can occur leading to death.

In the event of toxicity treat with emetics or gastric lavage and colonic irrigation, follow with epsom salt cathartic, keep patient warm, and use caffeine for stimulation if necessary. (Alschuler)

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[835] Felter HW, Lloyd JU. *King's American Dispensatory,* 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[836] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*… Eclectic Medical Publications, Sandy, OR 1985 p. 280-3

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[838] Felter

Echinacea spp. (E. angustifolia, E. purpurea, E. pallida, E. tenniseensis)

Asteraceae

Common name: Purple cone-flower, Cone-flower, Black sampson

Habitat:

Botanical description:

Parts used: whole plant

Constituents:

- Water-soluble immunostimulating polysaccharides (Echinosides): 4-O-methylglucuronylarabinoxylans, acidic arabinorhamno-galactans
- Volatile oil (0.08-0.32%; pallida>purpurea> angustifolia, highest in the spring : germacrene alcohol, borneol, bornylacetate, pentadeca-8-en-2-on, germacrene D, caryophyllene, caryophyllene epoxide
- Flavonoids (leaves): rutoside, quercetin
- Caffeic and ferulic acid derivatives(root, primarily): echinaside, cichoric acid, cichoric acid methyl ester, 2-O- caffeoyl-3-O-feruloyl-tartaric acid, 2,3-O-diferuloyl tartaric acid 2-O-caffeoyl tartaric acid, cynarin
- Alkylamides (root), isobutylamides, Alkaloids, resins, glycoproteins, sterols, minerals

Pharmacology:

The root of Echinacea contains inulin, which activates the alternative complement pathway leading to granulocyte chemotaxis, viral neutralization and bacteriolysis. Echinacea also increases serum properdin, which also stimulates the alternative complement pathway. The polysaccharides are non-specific T cell activators and stimulate T-cell mitogenesis, phagocytosis by macrophages, increase in TNF IL-1, Ig binding, and increases neutrophils. Echinoside is antibacterial

The alkylamides and cichoric acid, both of which are preserved in extract form, are the most potent stimulators of macro phagocytosis and are highest in E. purpurea, then E. angustifolia followed by E. pallida.

Echinacea also supports the immune system by activating natural killer cells. [839, 840] Three major groups of constituents work together to increase the production and activity of white blood cells (lymphocytes and macrophages), including alkylamides/polyacetylenes, caffeic acid derivatives, and polysaccharides.

Echinacea also increases production of interferon, an important part of the body's response to viral infections. [841] Other effects include an increase of the number of spleen cells, activation of the capacity for phagocytosis by human granulocytes, elevations in body temperature, reproduction of T-helper cells and the production of cytokines such as interleukin-1, interleukin-6 and TNF-alpha. [842]

Echinacea also inhibits hyaluronidase, stabilizing mucosal connective tissue against invasion by pathogenic organisms.

Echinacea also has antioxidant activity. Methanol extracts of freeze-dried Echinacea (E. angustifolia, E. pallida, and E. purpurea) roots were examined for free radical scavenging capacities and antioxidant activities. Root extracts of E. angustifolia, E. pallida, and E. purpurea were capable of scavenging hydroxyl radical and suppressing the oxidation of human low-density lipoprotein. The mechanisms of antioxidant activity of extracts derived from Echinacea roots include free radical scavenging and transition metal chelating. [843]

Echinacea enhances fibroblast growth and formation of glycosaminoglycans. Echinacea may increase the secretion of adrenal cortex hormones.

Medicinal actions: antiseptic, alterative, sialagogue, immunostimulant, Tissue regeneration, Anti-Inflammatory

Traditional Medicinal Use:

Specific Indications and Uses: To correct fluid depravation, "bad blood," tendency to sepsis and malignancy, as in gangrene, sloughing and spreading ulcerations; foul discharges, with weakness and emaciation; deepened, bluish or purplish coloration of skin or mucous membranes, with a low form of inflammation; dirty-brownish or jet-black tongue; tendency to the formation of multiple cellular abscesses of semi-active character, with marked asthenia. Of especial importance in typhoid, septicemia and other adynamic fevers, and in malignant carbuncle, pulmonary gangrene, cerebro-spinal meningitis and pyosalpinx.[844]

King described E. angustifolia as a corrector of the depravation of the body fluids although he felt that this did not sufficiently cover the ground. He wrote that its extraordinary powers are demonstrated in its effect over changes produced in the fluids of the body, whether from internal or external causes, septic or of devitalized morbid accumulations, or alterations in the fluids themselves such as exhibited in abscesses, glandular inflammations, snake or insect venom, diphtheria, cerebro-spinal meningitis, or septicemia.

A tendency toward malignancy in acute and subacute disorders, was considered a special indication for the use of Echinacea.

- Dermatologic Conditions: As a remedy for eczema, Echinacea was considered for chronic cases with sticky or glutinous exudations associated with asthenia and general depravity.

- ENT Conditions: Echinacea was indicated in tonsillitis, particularly in the necrotic form, with dirty-looking ulcerative surfaces. Echinacea was highly valued for the cure of catarrhal affections of the nose, naso-pharynx, and other portions of the respiratory tract. Echinacea was considered efficient in allaying the pain and healing the ulcers, particularly of the mouth, throat, and tongue. It is specially indicated by ulcerated and fetid mucous surfaces, with dusky or dark coloration, and a general debilitated tendency.
- Gastrointestinal Conditions: King considered Echinacea is a good appetite and digestive stimulant, having been used with benefit in fermentative dyspepsia, with halitosis and gastric pain aggravated by food as prominent symptoms. He also considered it useful in the treatment of duodenal catarrh, and other forms of intestinal indigestion, with pain and debility. It has been praised in mildly inflammatory conditions of diarrhea, cholera and dysentery, with a tendency to malignancy.
- Gynecological Conditions: Echinacea was considered to act admirably in purulent salpingitis, hastening cure and allaying distressing pain. It was frequently used in leucorrhoea with offensive discharges and in erythematous or erysipelatous vulvitis.
- Inflammatory Conditions: Echinacea has been prominently mentioned as a remedy for fevers. In the eruptive fevers and exanthems, it has received some praise for its control over the catarrhal phase, its influence in masking the odor and controlling pain. The fevers, however, in which it has accomplished the best results were in sympathetic fevers from septic infection and rheumatic attacks.
- Infectious Conditions: Echinacea was first popularized as a remedy for septicemia and has been successfully employed in injuries complicated with septic infection. In cerebro-spinal meningitis, Echinacea was utilized because of its sedative virtues and influence on the vascular area responsible for circulation of the cerebro-spinal meninges, and for its effects upon the general circulation. The cases benefited were those characterized by a slow, feeble pulse, or at least a pulse not appreciably quickened, with the temperature scarcely elevated, and cold extremities. Echinacea was used to relieve the pain of erysipelas, and contributed largely to a resolution of the swelling when extensive, tense, and of a purplish-red hue. It was reported to have relieved the pain of cancerous growths, particularly when involving the mucous membranes. Epidemic influenza was only occasionally ameliorated by Echinacea. Rather it was used to assists in convalescence. Used as an injection, Echinacea was applied to relieve the pain and inflammation in gonorrhea.
- Pulmonary Conditions: Chronic catarrhal bronchitis has been benefited by Echinacea, particularly in cases for which few remedies have been beneficial such as pulmonary gangrene.
- Topical Applications: Surgeons have used it with sterilized water to cleanse and dress wounds after operations to discharge tubercular abscesses, gangrene, empyema with gangrene of the lung, appendicitis, and carcinoma of the breast and testicle. Echinacea was highly endorsed as a topical dressing for malignant carbuncle, mammitis

Current Medicinal Use:

- Infectious Conditions: Fresh pressed juice of the flowers of Echinacea *(E. purpurea)* preserved with alcohol and tinctures of root of Echinacea *(E. pallida)* have been shown to reduce symptoms of the common cold in double-blind trials. Double-blind trials have also shown that various Echinacea extracts shorten the duration of the common cold. There is only one as yet unpublished study that has not supported this conclusion. The minimum effective amount of Echinacea tincture or juice to take, according to these trials, is 3 ml TID. More (3–5 ml Q2H) is generally better and is safe, even for children. Encapsulated products may also be effective, according to a double-blind trial involving *E. pallida.* Generally, 300–600 mg capsules TID are used.
  According to another trial, employees of a nursing home who consumed Echinacea tea at the onset of a cold or flu reduced the duration of their symptoms by about two days when compared with people consuming a placebo tea. The participants drank five to six cups of tea on the first day of their symptoms and decreased this by one cup each day over the next five days. Those consuming the Echinacea tea reported a shorter duration of symptoms and quicker, more effective symptom relief compared with those taking the placebo tea. While not as rigorously [845]designed as other studies exploring the use of Echinacea for colds and flu, this study continues to support other findings that suggest Echinacea or Echinacea-combination products may reduce the duration and severity of both conditions. [846, 847, 848]
- Topical Applications: In an uncontrolled study, 60 patients with topical Candidiasis were given 4.5 ml of the expressed juice of E. purpura over 10 weeks in conjunction with an antifungal cream. The treatment group had a 17% recurrence rate compare to 60% for the group getting the antifungal cream alone.[849]

Current Research Review:

- **Immunology:**
  - **Immune function:**
    Study 1: [850]
    - Design: Randomized placebo-controlled, prospective clinical trial.
    - Patients: Forty-eight healthy female volunteers (22-51 yo).
    - Therapy: Six groups: Standardized extract of E. purpurea (EP), ultra-refined E. purpurea/E.angustifolia

(urEPA), E. purpurea/E. angustifolia (EPA), E. purpurea/E. angustifolia plus larch arabinogalactan (EPALA), larch arabinogalactan (LA),or placebo x 4 weeks.

- Results: Complement properdin increased by 21 percent in theEPA group and by 18 percent in the EPALA group, compared to the placebo group. Self administered questionnaire showed improvements in overall physicalhealth, vitality, and emotional health in the same two groups (EPA and EPALA).
- Study 2:[851]
- Design: Five placebo-controlled randomized studies.
- Patients: One hundred thirty four healthy volunteers, 18-40 yo
- Therapy: Study 1 – IV homeopathic complex preparation with E. angustifolia D1; study 2 – oral alchoholic extract of roots of E. purpura; study 3a – oral alcholic extract of roots of E purpurea; study 3b – extract of E. pallida roots; study 4 – extract of E. purpurea herb; study 5 – IV homeopathic complex prepartion with E. angustifolia D4. Applied x 4 or x 5 consecutive days.
- Results: Studies 1 and 2 – phagocytic activity PNG was significantly enhanced compared with placebo.

- **Oncology:**
  - **Chemotherapy:**[852]
    - Design: Open prospective controlled clinical trial
    - Patients: Fifteen patients with advanced gastric cancer undergoing palliative chemotharpy with etoposide, leucovorin and 5-fluorouracil.
    - Therapy: Polysaccharide fraction from E. purpura herb cell cultures - 2 mg iv qd x 10 days, starting 3 days prior to chemotherapy.
    - Results: Patients who received the therapy had higher median number of leukocytes 14-16 days after chemotherapy compared to controls. This therapy might be effective in reducing chemotherapy-induced leukopenia.
- **ENT:**
  - **Common cold:**

    Study 1:[853]
    - Design: A placebo-controlled, randomised, double-blind clinical trial, phase IV.
    - Patients: Eighty adult male and female patients with first signs of cold.
    - Therapy: Echinaceae purpureae herba (Echinacin, EC31J0)
    - Results: In the experimental group the median time of illness was 6.0 days compared to 9.0 days in the placebo group. EC31J0 was clinically effective in alleviating symptoms more rapidly than placebo.

    Study 2:[854]
    - Design: Randomized placebo-controlled clinical trial
    - Patients: Patients with experimental rhinovirus colds.
    - Therapy: Echinacea
    - Results: Echinacea preparation used in the study did not significantly affect the occurrence of infection or the severity of illness.

    Study 3:[855]
    - Design: Randomized, double-blind, placebo-controlled clinical trial.
    - Patients: Two hundred forty six of 559 healthy adult volunteers caught a common cold and were treated.
    - Therapy: 1) Echinaforce (E.purpurea preparation from 95% herba and 5% radix), 2 tablets TID; 2) Echinacea purpurea concentrate (same preparation at 7 times higher concentration), 2 tablets TID; 3)Special E. purpurea radix preparation (totally different from that of Echinaforce), 2 tablets TID; 4) placebo until healthy, but no more than 7 days.
    - Results: Echinaforce and its concentrated preparation were significantly more effective than the special Echinacea extract or placebo.
  - **Cold and flu:**[856]
    - Design: Randomized placebo-controlled double-blind clinical trial
    - Patients: ninety five patients with early symptoms of cold or flu (runny nose, scratchy throat, fever)
    - Therapy: Echinacea Plus tea, 5-6 cup qd titrating to 1.

- Results: Treatment with Echinacea Plus tea at early onset of cold or flu symptoms was effective for relieving these symptoms in a shorter period of time than a placebo.

- **Cold and respiratory infections:** [857]
  - Design: Randomized placebo-controlled double-blind clinical trial.
  - Patients: One hundred and nine patients with a history of more than 3 colds or respiratory infection in the preceding year
  - Therapy: Echinacea purpurea fluid extract, 4 mL
  - Results: The conclusion of the study was that treatment with fluid extract of E. purpurea did not significantly decrease the incidence, duration or severity of colds and respiratory infections compared to placebo. Details: had at least one cold or respiratory infection during 8 week tx period: 35 of 54 – experimental group, 40 of 54 – placebo group; average number of colds and respiratory infections per patient: 0.78 – experiment group, 0.93 – placebo group; median duration of colds and respiratory infections: 4.5 days – experiment group, 6.5 days – placebo group.
- **Upper respiratory infections:**[858]
  - Design: Three-armed, randomized double-blind, placebo-controlled clinical trial
  - Patients: Three hundred two volunteers without acute illness at time of enrollement.
  - Therapy: Ethanolic extract from Echinacea purpurea roots, Echinacea angustifolia roots, or placebo, po x 12 weeks.
  - Results: In this study a prophylactic effect of the investigated echinacea extracts could not be shown. Details: Time until occurrence of 1st URI: 66 days – E.angustifolia group, 69 days – E.purpurea group, 65 days – placebo group. Percentage of people who had infection: 36.7% - placebo group, 32.0% - E. angustifolia group, 29.3% - E. purpurea group.

- **Dermatology:**
  - **Wounds:**[859]
    - Design: Clinical trial
    - Patients: Thirty-one patients with purulent wound of soft tissues
    - Therapy: Application of immunomodulator thymogen in combination with siliceous sorbent sillard application and adaptogenic preparation – tincture of Echinacea purpurea.
    - Results: More rapid healing of the wound and normalization of the immunity indexes.
- **Infectious diseases:**
  - **Genital herpes:**[860]
    - Design: Single-center, prospective, double-blind, placebo-controlled, cross-over clinical trial
    - Patients: Fifty patients with recurrent genital herpes, receiving 6 months' placebo and 6 months' therapy.
    - Therapy: Echinaforce – Echinacea purpurea extract
    - Results: No statistically significant benefit could be detected.
- **Gynecology:**
  - **Pregnancy:**[861]
    - Design: Prospective controlled clinical trial
    - Patients: 206 pregnant women. (Same number of women were in control group)
    - Therapy: Echinacea products
    - Results: Gestational use of Echinacea during organogenesis is not associated with an increased risk for major malformations.

Pharmacy:
Preserved juice of aerial portion (E. purpurea), 22% ethanol: 2-3 ml prn
tincture: (1:5) 2-4 ml
extract: (1:1) 2-4 ml
standardized extract: (3.5% echinacoside) 150-300mg

Drug Interactions:[862]
- **Econazole nitrate** (positive): E. purpurea juice (po, IV or SC) lowered the rate of recurrent Candidiasis in conjunction with topical econazole nitrate.

- **Immunosuppressive drugs** (negative): Brinker speculates that Echinacea spp. may counter the effects of cyclosporine, corticosteroids or other immuno-supressive medications based on animal studies.
- **Hepatotoxic drugs** (negative): E. spp. do contain pyrrolizidine alkaloids. However, they are in extremely low concentrations and do not contain the 1,2-unsaturated cecine ring associated with hepatotoxicity. None the less, Brinker suggests avoiding the combination of E. spp with anabolic steroids, amiodarone, methotrexate and ketoconazole.
- **7-benzyloxyresorufin:** Apparently, E. angustifolia roots inhibit the CYP 3A4 metabolic conversion of 7-benzyloxyresorufin.

Contraindications:[863] Brinker speculates that Echinacea be avoided in systemic progressive conditions such as: multiple sclerosis and collagenosis due to the possible in-vitro stimulation of fibroblasts by E. purpurea; leukosis and autoimmune conditions possibly due to non-specific immune stimulation due to the arabinogalactan polymers in hydroalcoholic extracts of the roots. He also hypothesizes that the arabinogalactans may be similar to those in the cell wall of Mycobacteria tuberculosis that suppresses cell-mediated immunity. Therefore, he suggests the avoidance of Echinacea spp. in tuberculosis.

In regard to the use of Echinacea pallida and E. angustifolia in HIV and AIDS patients, Brinker suggests that the nonspecific immune stimulation of the arabinogalactans. The arabinogalactans have been demonstrated in vitro to induce macrophage secretion of α-IFN and TNFα, cytokines that are generally elevated in HIV and AIDS patients and that are believed to contribute tot the disease process by depressing CD4 cells and increasing HIV replication respectively.

Finally, allergic hypersensitivity to plants in the Asteraceae family is common, therefore exercise caution with administration in atopic patients.

Toxicity: Immuno-suppression has been reported at doses 1000 times a recommended dose.

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Eleutherococcus senticosus

Araliaceae

Common name: Siberian ginseng, Ciwujia

Habitat: It is native to southeastern Russia, northern China, Korea and Japan.

Botanical description: A slender, thorny shrub that grows to 3 to 15 feet tall.

Parts used: Root

Constituents:

- Glycosides: Eleutherosides including eleutherosides B and E; Syringin; Phenylpropanes; Polysaccharide (eleutheran glycans); Ciwujianoside
- Phenolic compounds, Vitamins E, b-carotene, Caffeic acid, Copper

Medicinal actions: Adaptogen, antioxidant, chemoprotective, immunomodulator, hypertensive (in a hypotensive state), cardiotonic, tonic.

Pharmacology: Animal studies have shown Eleutherococcus to decrease adrenal hypertrophy, corticosteroid production and hyperglycemia. Also in animals, Eleutherococcus reduces the extent of the alarm reaction and prevents or delays the harmful exhaustive phase of the stress response.[864]

Animal studies support the use of Eleutherococcus as an antioxidant (eleutherosides), improving survival and resistance to pesticides, heavy metals, narcotics, industrial chemicals and chemotherapeutic drugs. The eleutherosides inactivate free radicals and accelerate lipid mobilization thus exerting a cellular protective effect.[865] Eleutherococcus also protects cells against ionizing radiation (eleutherosides).[866] Eleutherococcus is immunostimulatory; specifically it increases Cd4 cells and to a lesser extent Cd8 cells.[867]

Traditional Medicinal Use: Eleutherococcus has only recently been an addition to the western formulary. Thus, the Eclectic and Physiomedical physicians did not describe this herb.

Current Medicinal Use:

Eleutherococcus has been studied extensively (more than 1,000 papers have been published over the last three decades on Eleutherococcus) and has a long and continued history of use in Siberia and China to increase the length and quality of life, prevent infection, improve memory and improve appetite. It has a bitter-warming and sweet-warming quality. Compared to Panax ginseng, Eleutherococcus is less stimulating, tends to have a more rapid action and has a more generalized effect on immunity.

Eleutherococcus is an adrenal adaptogen. The adaptogenic properties of Eleutherococcus have been shown to be useful in chronic cardiovascular conditions, chronic infections, post-surgery, and chronic pneumonia, with improvement in mood, function, attention, energy, and sense of well-being.[868] In summary, the medicinal uses of Eleutherococcus are: treatment of chronic viral infections, prevention of infections, cancer prevention, adjuvant cancer therapy, treatment of chronic illness and fatigue, alleviation of chronic stress, and reduction of damage from heavy metal and pesticide toxicity.

- Endocrine Conditions: As described by Dr. Dirk Powell, Eleutherococcus is used to treat individuals who have adrenocortical hypofunction and Maladaptive Stress Syndrome stage 3 (MSS-3). It can be used to facilitate the recovery from steroid-induced adrenocortical suppression where the normal function of the hypothalamic-pituitary-adrenocortical (HPA) axis remains disrupted after discontinuance of steroid medications. *Eleutherococcus senticosus* has a long history of traditional use for treating fatigue and stress-induced illness and is known as adaptogenic, a glucocorticoid agonist, and tonic. Studies carried out on small animals have shown that *Eleutherococcus* extracts can prevent stress- induced adrenal gland changes, and stress-induced disease.[869]
- Immune Conditions: A 1987 W. Germany study supported the historical use of Eleutherococcus for the prevention of viral illness. In a double-blind, placebo controlled study involving 36 healthy volunteers, half received Eleutherococcus and the other half received placebo. The Eleutherococcus group showed an enhanced activation of CD4 T-lymphocytes.[870] In another study, enhanced T-lymphocyte activity was demonstrated by using 1.96 g tid of a 1:1 alcohol root extract. [871] CD4 cells are typically low in HIV disease, chronic viral infections and in cancer.

Eleutherococcus was given to 13,000 workers on a daily basis at the Volga Automobile Plant and the overall disease incidence and absence from work was reduced by 1/3 compared to a control group.[872]

Eleutherococcus is useful in the treatment of cancer for the additional reasons that it improves the general health of cancer patients, reduces the chance of metastasis if started early in the diagnosis.[873] Eleutherococcus also improves appetite, weight gain, shortens healing time, and increases lymphocyte activity in people with cancer.[874] Additionally, Eleutherococcus also dramatically reduces the side effects of radiation and chemotherapy including nausea, dizziness, loss of appetite.[875]

Pharmacy: It is best to dose Eleutherococcus in the morning and around noon to match the diurnal rhythms of the adrenal gland. Regarding adaptogens, starting with a high dose to achieve an initial therapeutic effect is necessary. At which point the therapeutic effect is achieved a lower maintenance dose is then indicated. In turn, application as a tonics usually do not indicate a large initial dose and a lower maintenance dose can be used initially.

Decoction
whole powder: 2-4 gm daily in two doses (Alschuler)
1:5 tincture: 5 ml two times daily (Alschuler)
1:2 Fluid Extract: 1-8 ml qd (Dipasquale)
Solid extract: 4:1 or 6:1 ¼ teaspoon 1-2 times daily (Alschuler)
Standardized extract:
100 mg capsule standardized to greater than 1% eleutheroside E: 200 – 400 mg daily in 2 doses
Maxxim L 24:1 extract, sig 10-20 gtt bid

Drug Interactions: [876]

- **Monmycin, kanamycin**: increases efficacy in treating Shigella dysentery and Proteus enterocolitis (human).
- **Hexobarbital:** inhibits metabolism (in vitro), enhancing the effect (animal).
- **Insulin:** may have additive effects (speculative) based on hypoglycemic effects (animal)
- **Digoxin:** may falsely elevate digoxin levels by affecting the digoxin assay, but does not cause toxicity and previous reports of cardiac glycoside activity is unfounded.

Contraindication: Brinker contraindicates the use of Eleuthero in hypertension (>180/90 mm Hg, human studies. Acute infections have also been listed as a contraindication; however, this may be debatable as Eleuthero does posses T-cell stimulating properties and has been evaluated in some acute gastrointestinal infections in conjunction with antibiotics.[877] Eleuthero has also been traditionally contraindicated in depleted states.

Toxicity: No information is available in the selected resources.

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[876] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. P 86

[877] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 86

Ephedra sinensis (sinica)

Ephedraceae

Common name: Ma huang

Habitat:

Botanical description:

Part used: stems and branches, root

Historical use:

Energetics:

Constituents [878]

- Stem: 1–3% total alkaloids of the 2-aminophenylpropane type, with ephedrine accounting for 30–90% of this total, depending on the plant species: main alkaloids L-(-)-ephedrine (1R,2S-(-)- ephedrine) and D-pseudoephedrine (1S,2S-(+)-ephedrine); lesser alkaloids L-norephedrine, D- norpseudoephedrine.
- Root: ephedradine A/B (hypotensive componds), maokine (hypertensive compound)

Pharmacology:

Both ephedrine and its synthetic counterparts stimulate the central nervous system, dilate the bronchial tubes, elevate blood pressure, and increase heart rate. Pseudoephedrine (the synthetic form) is a popular over-the-counter remedy for relief of nasal congestion. Little research has been done on using the whole plant (compared to its isolated alkaloids) for any condition. [879]

Ephedrine and pseudoephedrine both have adrenergic effects.[880]Ephedrine is a sympathomimetic acting similarly to epinephrine:

- stimulation of α and β adrenergic receptors and NE release
- increase diastolic and systolic blood pressure, cardiac output, heart rate, coronary, cerebral and muscular blood flow
- decrease renal and splanchnic blood flow
- increase bronchial muscle relaxation and other smooth muscle except the uterus

Pseudoephedrine has other effects on the body including bronchodilation; weaker pressor, cardiac and CNS effects; and antiinflammatory effects through reduction of PG E2 synthesis.

Medicinal actions: diaphoretic, antipyretic, antiallergic, antiasthmatic, sympathomimetic/respiratory spasmolytic

Medicinal uses:

- Metabolic Conditions: Ephedrine increases the basal metabolic rate of adipose tissue, thus best for patient with a low BMR and who is overweight. Double-blind studies have shown that ephedra, particularly when combined with caffeine, promotes weight loss. However, many doctors discourage the use of ephedra as a weight-loss aid because of the many side effects that can occur with its use, especially since many of the side effects are intensified when ephedra is combined with caffeine. [881]
- Pulmonary Conditions: The sympathomimetic effect can be utilized for respiratory conditions such as asthma. The antiallergic and decongestive properities can be utilized in otitis media, influenza, pneumonia, whooping cough, bronchitis and acute or chronic sinutis.

For asthma and hay fever, Ephedra is used in mild to moderate cases with the peak effect occuring in 1 hr after adiministration and lasting approximately 5 hr. The medicinal effect decreases with chronic use due to adrenal fatigue caused by ephedrine.

Pharmacy: Long term use should be supported by Glycyrrhiza glabra, Panax ginseng, vitamins C, B6, B5 and magnesium and zinc to support adrenal function. Ephedra can be combined with expectorants such as Glycyrrhiza glabra, Grindelia camporum, Euphorbia hirta, Drosera rotundifola, Polygala senega.[882]

In the United Kingdom Ephedra has a maximum permitted dosage of 600 mg tid. In the United States, the sale of Ephedra products containing greater than 8 mg ephedrine per dose is restricted.

Dried Herb (Asthma, weight loss): 500-1000 mg (12.5-25 mg ephedrine) 2-3x/day

Drug Interactions: [883]

- Anesthetics: combination may cause arrhythmia.
- Antidepressants, tricyclic: Hypertension and arrhythmia may result from combination. However, amitriptyline blocks the hypertensive effect of ephedrine.
- Antihypertensives: ACE inhibitors and beta-blockers may be antagonized resulting in severe hypertension. Ephedrine antagonizes the effect of guanethidine although the latter with enhance the sympathomimetic effect.

- Bromocriptine: combination may increase toxicity.
- Bronchodilators: effects may be enhanced by combination with ephedrine.
- Cardiac glycosides: combination may cause arrhythmia.
- Dexamethasone: decreased half life with ephedrine administration by increasing metabolic and urniary clearance.
- Methyl xanthines (theophylline, caffeine): combination increases thermogenesis and weight loss.
- MAO inhibitors: adverse effects reported in human cases. Ephedrines sources should be avoided for 2 weeks after stopping MAO inhibitors.
- Oxytoicn: combination may cause hypertension due to additive vasoconstrictive effects.
- Reserpine: prior use of reserpine may antagonize the effects of ephedrine.
- Urinary acidifiers (ammonium chloride): increase urinary clearance of ephedrine and pseudoephedrine
- Urinary alkalizers (sodium bicarbonate): decreases urinary clearance of ephedrine and pseudoephedrine
-

Contraindications:[884,885]

- Anorexia and bulemia due to appetite suppressant properties (animal)
- Anxiety
- Bronchitis,chronic and emphysema,
- Cerebral blood flow impairment due to vasoconstriction (empirical).
- Children under 6
- Depression with suicidal tendencies due to the anxiety caused by the sympathomimetic activity (empirical)
- Diabetes due to the hyperglycemic effect of ephedrine in acute and long term use (human).
- Gastric ulcer de to the possible reduction of mucus.
- Glaucoma due to reduced fluid drainage from the eye (empirical)
- Heart disease and hypertension due to cardiac stimulant, potential arrhythmic and vasoconstrictive effects (speculative and empirical)
- Insomnia due to adrenergic effects.
- Pheochromocytoma due to excessive sympathomimetic effects.
- Renal failure due to accumulation of alkaloids secondary to reduced secretion.
- Thyroid, hyperactive due to immediate increase in BMR and increased T3 to T4 ratio after 4 weeks use (human)
- Prostatic enlargment due to alpha adrenergic activity causing contraction of bladder neck and prostate musculature.
- Pregnancy and nursing due to uterine stimulant action of the alkaloids (in vitro, animal) and sympathomimetic effects on the infant (speculative).

Toxicity: Ephedrine mimics the effects of epinephrine and causes symptoms such as tachycardia, high blood pressure, agitation, insomnia, nausea, loss of appetite, and urinary retention.

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[884] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 87-88

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Equisteum spp. **Equisetaceae**

Common names: Horsetail, scouring rush, shave grass

Botanical description: In spring, the plant produces unbranched stems with brown terminal cones that produce spores. In summer, the plant grows to 50 cm and produces green sterile stems with whorls of 4 winged lateral branches. This genus is composed of primitive plants, which are the only members of this family.

Parts used: Entire plant

Energetics: Energetically, Equisteum is a strong and hearty plant with tremendous vital force. It pushes its way up through soil, firm ground, ice and snow. The plant is decisively strengthening to its ingester.

Constituents [886]

- Inorganic constituents (10%): silicic acid (65%) of which 10% is in the form of water-soluble silicates.
- Flavonoids: in particular quercetin-, kaempferol-, luteolin-, genkwanin-3-O-glucosides, 5-O-,7-O-glucosides and diglucosides, apigenin and luteolin 5-glucosides and their malonyl esters
- Caffeic acid ester: including chlorogenic acid, dicoffeoyl-meso-tartaric acid
- Styrolpyrone glucoside: equisetumpyron
- potassium salts, Polyenic acids; Dicarboxylic acids; Sugars
- Pyridine alkaloids: nicotine and spermidine types (traces)

Pharmacology

Horsetail is rich in silicic acid and silicates, which provide approximately 2–3% elemental silicon. Some experts have suggested the element silicon is a vital component for bone and cartilage formation. Potassium, aluminum, and manganese, along with fifteen different types of bioflavonoids, are also found in this herb. The presence of these bioflavonoids is believed to cause the diuretic action, while the silicon content is said to exert a connective tissue-strengthening and anti-arthritic action.[887]

Medicinal actions: Diuretic, Connective tissue tonic

Pharmacology: Equisteum causes increased flow of water through the ureters without altering the electrolyte balance. Equisteum contains silica: 2 gm of herb boiled in 200 ml of water for 3 hours will yield 55 mg of silica dioxide.[888] Silica is found in trace amounts in skeletal structures (bones and teeth).[889]

Traditional Medicinal Use:

Specific Indications and Uses.—Cystic irritation; nocturnal urinal incontinence; tenesmic urging to urinate; dropsy; renal calculi.[890]

- **Gastrointestinal Conditions:** The ashes of the plant were very valuable to the Eclectics for use in dyspepsia connected with obstinate acidity of the stomach.
- **Genitourinary Conditions:** The Eclectics used Equisetum for edema, suppression of urine, hematuria, gravel, nephritic affections, and in gonorrhea. This plant was considered to have a specific action in irritation of the bladder, particularly leading to urinal incontinence, and in dysuria with tenesmic urging, in the nocturnal urinal incontinence of children.
- **Male Conditions:** Equisteum was used by the Eclectic physicians for the treatment of prostatitis with symptoms of scanty urination and pain in the prostate. The Eclectics would combine Equisteum with Salix nigra in the treatment of prostatic enlargement (astringent and tonic actions).

Current Medicinal Uses:

- **Gastrointestinal Conditions**: The ash from Equisteum may also be taken internally for dyspepsia as it is particularly high in potassium and sodium hydrate (alkalinizing substances). Older plants (mid to late summer, fall) contain too much silica and are not to be gathered for internal use. Also important is the locale of the plant.
- **Genitourinary Conditions:** German Commission E monograph of Equisteum spp. indicate it for edema secondary to trauma or dependent edema. Equisteum is generally considered to be a weak diuretic, although it's action may be pronounced in some individuals. Equisteum is most indicated in someone with scanty urine, irritable bladder with tenesmus, and incontinence caused by cystic irritation.
- **Connective Tissue Conditions:** Equisteum is also used as a connective tissue tonic. This is primarily due to it is content of silica, which is incorporated into connective tissue. Silica helps to stabilize collagen and is part of the bony matrix. The silica in Equisteum will deposit into soft tissue as well and with accumulation over time this will create tissue irritation. For this reason, long-

term use (greater than one month) of Equisteum is discouraged. If Equisteum is to be used long-term, periodic vacations from the herb must be taken. The connective tissue tonifying action of Equisteum seems to be most pronounced in the pelvic area. This combined with its diuretic action, give Equisteum strong indication in the treatment of repeated urinary tract infections, and urinary prolapse.

The age of the plant when harvested alters its medicinal effects. The young shoots are gathered early in the spring as an edible green. During the spring, the plant may be harvested for drying or made into a fresh plant tincture. The young shoots contain a nutritious sap which may be squeezed out of the stem as a sweet, nutritious drink. Additionally, this sap is anti-inflammatory and antiseptic and may be applied directly to inflamed conjunctiva or fatigued eyes (this use is derived from Native American usage of the plant).

- **Topical Applications:** The plant is burned and the ash is also made into pastes and compresses to speed the healing of skin lacerations and to reduce inflammations.

Current Research Review:

- **NIDDM:** Water extract of the aerial parts of Equisetum myriochaetum showed a hypoglycemic effect in type 2 diabetic patients starting 90 min after its administration. A single dose of the extract (0.33 g/kg) was used in 11 recently diagnosed type 2 diabetic patients; the same patients served as control group. Blood glucose was reduced by the extract; there were no significant changes in the insulin level.[891]
- **Diuretic activity:** [892] No abstract available from Medline.

Pharmacy:

Contraindications/Toxicity:

The use of Equisteum in conditions involving impaired cardiac and kidney function is contraindicated.[893,894]Long-term use is contraindicated. Brinker also cautions against use in children.[5] Equisteum heavily concentrates minerals from the soil in which it grows. Thus, Equisteum plants by roads and industrial areas will concentrate heavy metals such as cadmium and lead.

Equisteum should not be used in people with edema that is the result of impaired kidney function. Long-term continuous use (over 1 month) may result in tissue irritation and consequent inflammation.

Digitalis and other cardiac glycosides may be potentiated due to potassium loss secondary to diuresis caused by Equisetum. Equisetum contains thiaminase as well.

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[886] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

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Eriodictyon californicum (E. angustifolium, E. crassifolium, E. glutinosum)

Hydrophyllaceae (Waterleaf family)

Common name: Yerba Santa, Yerba Blanca, Mountain Balm, Bear's Weed, Consumptive's Weed, Tarweed, Gum Bush.

Current Trade Name: Respirtone – as liquid extract, liniment, powder, syrup or tea.[895]

Habitat: E. californicum grows on dry ridges & slopes from the north coastal range of California as far south as Monterey County, up into southern Oregon, & down the west side of the Sierra Nevada from near Mount Lassen to almost as far as Tehachapi. It is also found in the San Bernardino Mountains. It grows at an altitude of from 1000 – 5000 feet. [For habitat descriptions of other Eriodictyon spp., see Micheal Moore's book entitled: *Medicinal Plants of the Pacific West*.]

Botanical Description: A low, shrubby evergreen plant, 2-4 feet in height. The stems are smooth & exude a gummy substance. Leaves are 3-4" in length, distinctively woolly on the undersides, containing a network of prominent viens, & the resinous surface is smooth w/ depressed veins. The flowers are terminal, appearing in shades of dark lavender through pale shades of lavender to white; forming funnel-shaped clusters at the top of the plant. The fruit capsule is oval, grayish-brown & containssmall brown shriveled seeds.

Parts used: Leaves.

Energetics: Pungent taste. Heating. (-) Kapha & Vata. (+) Pitta.[896]

Constituents:[897]

- Flavonoids: Eriodictyonin, Eriodictyol, Chrysoeriodictyol, Xanthoeriodictyol.
- Volatile oil (very little).
- Resinous substances: composes of flavonone & flavone aglycones (triacontane, pentatriacontane, cerotic acid, eriodonol)
- Tannins.

Pharmacology:

Expectorant action of Yerba Santa is thought to be due its contents of flavonoids & resins. Flavonoid glycosides have numerous effects in the body: anti-oxidant, anti-anaphylactic, anti-allergic, anti-thrombotic, anti-inflammatory, cardiotonic, hypotensive, & anti-arrhythmic. In general, flavonoids help to stabilize, protect, & potentiate the body's own biological response to external influences. Hence, flavonoids have been referred to as "Biological Response Modifiers", acting by bringing the body back into homeostasis.[898] In the case of expectoration, homeostasis is supported via the clearing of pectoral congestion.

Resins are warming & stimulating, making them useful for cold ailments & for promoting circulation; as they are expectorating & antibiotic. By combining the warming & circulatory enhancing actions w/ anti-oxidant & influences of homeostatic regulation, the combination of flavonoids & resins in Yerba Santa does help to understand its physiologic response in the body through a pharmacological perspective.

Medicinal actions: Aromatic. Expectorant. Lung Tonic. Stimulant.

Current & Traditional Medicinal uses:

- The name Yerba Santa, or Holy Weed, was given by the Spanish who became aware of its medicinal qualities from the local native Indians. Traditionally, the fresh or dried leaves where boiled for: colds, coughs, sore throat, catarrh, stomach aches, vomiting & diarrhea. Yerba Santa is a leading rx for all respiratory conditions, & also has a reputation of healing hemorrhoids, when other rx have failed. Eridictyon can also be used in kidney conditions & rheumatic pains.[899]
- **Respiratory Conditions:** Yerba Santa has been regarded as one of the most effective natural treatments for chronic respiratory problems. Eriodictyon is most indicated in chronic, productive, hacking, persistent coughs, & is best suited for chronic lung afflictions such as: asthma, chronic bronchitis, or chronic laryngitis. Yerba Santa has been traditionally used as a lung tonic & to mask the taste of quinine in syrups.
- **Urinary Conditions:** Eriodictyon may also be used for chronic inflammation of the urinary system.
- **Topical Use:** Native Indians used Yerba Santa as a poultice on broken & unbroken skin for pain from rheumatism, fatigued limbs, swellings, sores, etc.[900]

Current Research Review:

- Search of Medline yielded no human studies as of September 2002.

Pharmacy: [901]

- 1:5 tincture—2-5 ml TID
- 1-3 gm dried herba

Yerba Santa tends to mask the bitter taste of other herbs.
Eriodictyon can either be used alone or in combination w/ other herbs, as it combines well. To For its stimulating expectoration, it combines well with Grindelia robusta, i.e. for asthma. For its tonifying action, it combines well with Inula helenium..

Contraindications/Toxicity: No information is currently available from the selected references.

Eschscholtzia california

Papaveraceae

Common name: California poppy

Habitat: California

Botanical description:

Part used: whole plant, herb, root

Historical use:

Energetics:

Constituents: alkaloids (isoquinoline, chelerythrine, sanguinarine, chelidonine, cryptidine), flavone glycosides

Pharmacology:[902] Chelerythrine, an alkaloid constituent, is a protein kinase C inhibitor with antitumor activity. In the dorsal horn of the spinal cord, protein kinase C activation contributes to constant pain induced by heat or chemical stimulation. Chelerythrine reduced the number of nociceptive responses and may attenuate the development of morphine dependence. Chelerythrine and sanguinarine have affinity for vasopressin V1 recepotors competitively inhibiting binding to this site.

Medicinal actions: anxiolytic (lower doses), sedative (higher doses), analgesic, anti-inflammatory, emenogogue

Medicinal uses:

According to Weiss:

- Nervous Conditions: California poppy is used for childhood neuropahties and enuresis.

According to Mills and Bone:

- Nervous Conditions: Disturbed sleeping patterns can be normalized by Eschscholtzia, particularly in conjunction with Corydalis cava. The two hebs in combination may establish an appropriate catecholamine status for maintaining sedative and antidepressant effects.[903] Eschscholtzia has been shown to inhibit enzymatic degradation of catecholamines as well as the synthesis of adrenaline, dopamine β-hydroxylase and monoamine oxidase.
- Pain Management: Studies have identified interactions with opiod receptors and other neurotransmitter activity with the combination of Eschscholtzia.

very helpful for children as glycerin
for anxious, agitated people
Combines well with other nervine herbs

Pharmacy: infusion: 1 tsp. per cup H_2O
1:1 extract

Contraindications: Pregnancy due to cyrptidine alkaloids

Toxicity:

Eucalyptus globulus — Myrtaceae

Common name: Eucalyptus, Blue Gum Tree.

Habitat: Largely Australia, but ~90 spp. Grown in CA & a few in Florida.

Botanical description: The leaves are sword-shaped, 10-15 cm long & about 3 cm wide, bluish-green, shortly stalked & rounded at the base w/ numerous transparent oil glands. The tree attains great heights (even above 400'), has a light-brown bark & long swaying branches.

Parts used: Oil, Leaves & Bark.

Energetics: Pungent. Heating. (-) Kapha & Vatta. (+) Pitta.

Constituents:

- Volatile Oil (up to 3.5%): majority as eucalyptol (1,8-cineol).
- Polyphenolic Acids.
- Flavonoids.

Pharmacology:

Rat studies have shown that consumption of the leaves or inhalation of the oil induces hepatic mixed function. Extrapolation of this function suggests that Eucalyptus may increase the rate of metabolism & clearance of certain drugs, including: Phenobarbital, Minopyrin, & Amphetamines, as well as increase the toxicity of plants containing pyrrolizidine alkaloids.[904]

The volatile oil has been found to inhibit prostaglandin biosynthesis, having a mild hyperemic, expectorant & secretolytic motor effect when used topically. Eucalyptus has also been shown to relieve coughs by increasing surfactant. In general, the oil is secretolytic, expectorant, mildly anti-spasmodic, & is a mild local hyperemic.[905] Eucalyptus oil is similar to menthol in that it acts on receptors of the nasal mucosa, causing a reduction of nasal congestion. The oil of eucalyptus is also anti-bacterial against such organisms as *Bacillus subtilis*, as well as several strains of *Streptococcus*.[906]

Medicinal actions: Antiseptic. Anti-spasmodic. Expectorant. Stimulant. Febrifuge. Diaphoretic. Decongestant.

Current & Traditional Medicinal uses:

In aromatherapy, Eucalyptus oil helps to relieve mental fatigue, improve mental clarity & alertness, is refreshing, reviving, energizing & stimulating.

- **Pulmonary Conditions:** Eucalyptus oil is used most often in the form of a steam inhalation, acting as an anti-spasmodic to the respiratory passages. This is greatly beneficial in cases of asmtha, sinusitius, & other congestive respiratory disorders, through its ability to promote expectoration. Eucalyptus is thus a relaxing expectorant & promotes drainage from congested respiratory passages. The volatile oil is also antiseptic which makes it well indicated in respiratory & sinus infections.
- **Topical Applications:** Oil of Eucalyptus is used externally as a rubefacient, decongestant & antiseptic. Eucalyptus oil is one of the most powerful antiseptic oils, esp. upon exposure to the air, as ozone is formed in the oil. The safest application of Eucalyptus oil is as an inhalant.

Current Research Review:

- **Tension headache**: In a trial on tension headache, Peppermint (10 g) & Eucalyptus (5 g) oil in combination, applied topically to the forehead & temples for three minutes with a small sponge, have been shown to be helpful as a muscle relaxant (but not for analgesia) in individuals with tension headaches.[907]
- **Athletic training:** In a study to prevent sore muscles Eucalyptus was used as a pre-event warm-up/topical application. Ten normal subjects were involved in this placebo-controlled study. Muscle temperature was measured before and 30 min after the application of Eucalyptamint. There were statistically significant increases in cutaneous blood flow (up to 4 times base-line) and skin temperatures (up to 0.8 degrees C higher than base-line) after the application of Eucalyptamint with the effects lasting up to 45 min after the application. The muscle temperature was also increased (0.4 degrees C) significantly (P less than 0.05) 30 min after application of the Eucalyptamint. The results of this study suggested that the eucalyptus preparation produced significant physiologic responses that may be beneficial for pain relief and/or useful to athletes as a passive form of warm-up.[908]
- **Insect repellant:** Eucalyptus oil extract is effective in protecting human volunteers from various types of biting insects. On human forearms, it was determined that the eucalyptus extract was nearly as effective as a 20% solution of diethyltoluamine (used in many insect repellents) in repelling bites of the *Anopheles* mosquito (the insect that spreads malaria) for up to five hours. The eucalyptus extract was also effective at repelling flies (94%) and midges (100%) for up to six hours.[909]

- **ENT:** Eucalymine, Eucalyptus-based drug made in Russia, was found to have a good anti-inflammatory effect in children with acute maxillary sinusitis, exacerbation of chronic purulent maxillary sinusitis, and peritonsillar abscess.[910]

Pharmacy:

In order to provide an effective expectorant and antiseptic action, the leaf oil should contain approximately 70–85% eucalyptol.[911]

Contraindications/Toxicity:

- C/I: low blood pressure, renal inflammation, GI and biliary inflammation, hepatic disorders and use by children under the age of two.[912]

Eucalyptus oil is toxic if taken internally, potentially causing kidney irritation & damage (the organ through which the majority of the oil is excreted) & eventually causing CNS depression & respiratory paralysis.

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[904] Brinker, F. *Herb Contraindications and Drug Interactions*. Eclectic Medical Publications, Sandy, OR, 1998:70.

[905] *PDR for Herbal Medicines*. Medical Economics Company, Inc, Montvale, NJ, 2001.

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[908] Hong CZ, Shellock FG. Effects of a topically applied counter irritant (Eucalyptamint) on cutaneous blood flow and on skin and muscle temperature: A placebo controlled study. *Am J Phys Med Rehab* 1991;70:29–33.

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[910] Tarasova GD, Krutikova NM, Pekli FF, et al. Experience in the use of eucalymine in acute inflammatory ENT diseases in children. *Vestn Otorinolaringol* 1998;(6):48-50.

[911] Robbers JE, Tyler VE. *Tyler's Herbs of Choice: The Therapeutic Use of Phytomedicines*. New York: Haworth Press, 1999, 123.

[912] Brinker, p. 69

Eupatorium perfoliatum

Compositae

Common name: Boneset, Eupatorium

Habitat: N. America

Botanical description: A perennial herb with opposite leaves, 10-15 cm. long, lanceolate, tapering to a narrow point and united at the base. The margin is crenate and shiny yellow points due to the resin glands are visible on the under surface. The flowers are small and inconspicuous and occur in cymose-paniculate inflorescences.

Parts used: Herba

Constituents: [913, 914]

- Sesquiterpene lactones: euperfolin, euperfolitin, and eufoliatin
- polysaccharides, flavonoids

Pharmacology: The polysaccharides and sesquiterpene lactones are immunostimulatory and enhance phagocytosis in vitro.
In vitro studies have demonstrated that extracts of E. perfoliatum have been shown to stimulate immune cell function.[915]
The cytotoxic and antibacterial activity of an ethanol extract of leaves of Eupatorium perfoliatum was investigated in a recent study. The extract showed potent cytotoxicity with EC(50) values (12-14 μg/ml) comparable to a standard cytotoxic agent, chlorambucil. The extract showed a weak antibacterial activity against gram-positive test organisms (Staphylococcus aureus and Bacillus megaterium). [916]

Medicinal actions: Febrifuge, diaphoretic, tonic, laxative

Traditional Medicinal Uses:
Cook considered the leaves and flowers of this plant are among the truly valuable remedies of our native Materia Medica. He described Boneset as almost a pure relaxant that acts rather slowly and persistently with its greatest power expended upon smooth muscle of the stomach, gall-ducts, bowels, and uterus where if combined with a diffusive stimulant such as Xanthoxylum, a good antispasmodic influence will be obtained.

Given by cold infusion, or other cold preparation, it is a soothing and relaxing tonic:

- Dermatologic Conditions: Cook used Boneset in skin diseases of hepatic origin.
- Gastrointestinal Conditions: Cook found the cold infusion of E. perfoliatum to be suitable for irritable dyspepsia and to secure a mild laxative action for habitual constipation, with thirst and dryness of the feces. For strengthening purposes, he combined it with stimulating tonics such as Gentiana, Sabbatia, Hydrastis, Artemisia, and a small portion of Capsicum. Injections, administration of a medicinal substance into a canal of the body, was a more frequently used technique in the time of the Eclectic and Physiomedical physicians than in modern times. The warm infusion of Boneset was used as a relaxant rectal injection for constipation and for its nervine influence (which was observed to perform better than when given orally). When combined with a small amount of Zingiber and demulcents, the injection was observed to create a lasting diffusion of blood into the intestinal mucosa.
- Hepatobiliary Conditions: Cook described the cold infusion of Boneset as a gentle hepatic relaxant, promoting both the secretion and ejection of bile. The Physiomedicalists found this preparation to be particularly effective for bilious cases when there was sensitivity and tension of the tissues or when it is necessary to maintain steady laxity of the bowels without actual catharsis. Though the effect of boneset on the hepatic and gastrointestinal secretions is slow and mild, it was considered persistent and very reliable.
- Inflammatory Conditions: Boneset was noted for the effect of relieving aching of the limbs in recent colds and rheumatism, the likely source of its name. The warm infusion of Boneset was used to induce a slow, gentle, persistent diaphoresis. For this purpose the Physiomedicalists found it is very useful in bilious conditions with fever and fevers associated with infectious conditions where bowel function is not lax.
  The cold infusion has been used in recovery from febrile conditions, especially intermittent and bilious fevers.
- Pulmonary Conditions: Boneset was noted to have a soothing and toning influence upon the respiratory organs (and that whether given in cold or warm preparations). Cook took advantage of this effect to influence the lungs and was used in weakness of the chest, dull aching through the lungs, and chronic coughs, especially in slightly irritable conditions or in languid conditions, if combined with a stimulant.

Current Medicinal Uses: *E. perfoliatum* is a stimulating, tonic and antispasmodic diaphoretic.

- Gastrointestinal Conditions: It possesses mild aperient activity (by stimulating the release of bile) and will thus gently address constipation. For this reason, *E. perfoliatum* is indicated in post-influenzal gastric irritation with biliousness and constipation.

- Inflammatory Conditions: The plant exerts anti-inflammatory actions. Eupatorium is indicated in bone-breaking fevers as it will help to release the heat through stimulation of diaphoresis. *E. perfoliatum* is most indicated for influenza with fevers and night sweats and aching bones.
- Pulmonary Conditions: *Eupatorium perfoliatum* is helpful in conditions of catarrh such as bronchitis. As a tonic, *E. perfoliatum* is useful in debilitated states with recurrent fevers and dyspepsia.

Current Research Review:

- **ENT:**
  - **Common cold:**[917]
    - Design: Contolled clinical trial
    - Patients: Fifty three patients with common cold
    - Therapy: Acetylsalicylic acid (ASA) or homeopathic Eupatorium perfoliatum D2.
    - Results: Neither subjective complaints nor body temperature or laboratory findings showed any significant differences between groups which was taken as evidence that both drugs were equally effective.

Pharmacy: As far back as to the Physiomedical tradition (as far as the Western tradition of herbalism goes) it was noted that, as with many botanicals, Boneset is applicable to a variety of conditions according to the form in which it is prepared. Hot tea will produce diaphoresis, and in some cases, vomiting and evacuation of the bowels. Cool tea will act as a tonic. Warm tea will induce slight perspiration.

Infusion: 1-2 tsp. herb/cup water; during fevers of the flu drink 1 cup every half hour as hot as possible.
Tincture 1:5 25% EtOH; sig 2-4 ml TID

Contraindications: Cook stated that E. perfoliatum is not applicable to cold and sluggish states of the stomach liver and bowels when accompanied with flaccidity of the tissues nor as a tonic in any case where the bowels are inclined to free action.

Contraindications: E. perfoliatum is contraindicated in pregnancy due to the risk of an abortifacient effect (animal studies) or cathartic effect (empirical) associated with ingestion of large amounts.[918]

Toxicity: Large quantities, especially if used quite warm and at short intervals, were used to induce emesis.[919] Contact dermatitis can result due to the sesquiterpene lactones found in the Asteraceae family, particularly in the Eupatorium genus.[920]

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[913] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000

[914] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[915] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[916] Habtemariam S, *Cytotoxicity and antibacterial activity of ethanol extract from leaves of a herbal drug, boneset (Eupatorium perfoliatum).* Phytother Res. 2000 Nov;14(7):575-7.

[917] Gassinger CA, Wunstel G, Netter P. A controlled clinical trial for testing the efficacy of the homeopathic drug eupatorium perfoliatum D2 in the treatment of common cold. *Arzneimittelforschung* 1981;31(4):732-6.

[918] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 46

[919] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985

[920] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 46

Eupatorium purpureum

Asteraceae

Common name: gravel root, Queen of the Meadow, boneset (E. perfoliatum), Joe-pye weed

Habitat:[921] Indigenous to N. America from Canada to Florida. Grows in swampy and rich low grounds.

Botanical description: [922]
Stem is rigidly erect, ~ usually 5-6 ft (but can be up to 12 ft) high, stout, unbranched, either hollow or with incomplete pith. It is purple above the joints and often covered with elongated spots and lines. Leaves are oblong and pointed, rough above, but downy beneath. They are placed in whorls of 4-5 on the stem (mostly 5) and are nearly destitute of resinous dots. The margins are coarsely and unequally toothed, the leaf-stalks either short or merely represented by the contracted bases of the leaves.
The flowers are purple, in a dense terminal inflorescence, the heads very numerous, 5-10 flowered, contained in an eight-leaved, fresh-colored involucre. E. purpurum blossoms in the summer months.

Parts used: Root and rhizome

Constituents:
- Boneset contains sesquiterpene lactones, such as euperfolin, euperfolitin, and eufoliatin, as well as polysaccharides, flavonoids,[923, 924] and pyrrolizidine alkaloids

Pharmacology:
- Boneset contains sesquiterpene lactones, such as euperfolin, euperfolitin, and eufoliatin, as well as polysaccharides and flavonoids. In test tube and other studies, extracts of boneset have been shown to stimulate immune cell function. This may explain its ability to help fight off minor viral infections, such as colds and the flu. Boneset also triggers sweating by raising body temperature, also potentially of benefit for colds and flu. [925]
- The cytotoxic and antibacterial activity of an ethanol extract of leaves of boneset (Eupatorium perfoliatum), was investigated in a recent study. The extract showed potent cytotoxicity with EC(50) values (12-14 microg/mL) comparable to a standard cytotoxic agent, chlorambucil. The extract showed a weak antibacterial activity against gram-positive test organisms (Staphylococcus aureus and Bacillus megaterium). [926]

Medicinal actions: Diuretic, anti-lithic, anti-rheumatic,[927] stimulating nervine, tonic, alterative

Traditional Medicinal Uses:
- Genitourinary Condtions: Its principal influence was considered to be upon the kidneys, and it was employed as a diuretic.[928] The specific indications for E. purpureum were irritation of the bladder in women from displacement and chronic inflammation of the uterus; suppression of urine, partial or complete, during or after pregnancy. E. purpureum was used in edema, gravel, hematuria, strangury (painful and interrupted urination in drops produced by spasmodic muscular contraction of the urethra and bladder), pain in the kidneys and bladder, cutting pain with urination, constant desire to urinate, burning distress and mucous in the urine.[929]
- Gynecological Conditions: Chronic endometritis and other chronic uterine disease, leucorrhea, ovarian and uterine atony, and dysmenorrhea. In the pregnant women, it was utilized for threatened miscarriage and insufficient labor pains.[930]
- Inflammatory Conditiions: Intermittent fever with chills in the lumbar region, bone pain and violent shaking with little perspiration, frontal headache, weakness and fatigue, intermittent paroxysms and fever with night sweating. Its use has also been indicated for scarlet fever.[931]
- Nervous Conditions: Eupatorium purpureum was thought to act on the ganglionic system of nerves. (Note: this appears to mean as having an effect on the sympathetic nervous system which is likely calming as he further states that it improves digestion). [932]

Current Medicinal Uses:
- Genitourinary Conditions:[933]
- *E. purpureum* is used most often in the treatment of renal and urinary calculi. It stimulates renal function, presumably through a stimulation of the sympathetic nervous system. It is both stimulating and sedating to the renal apparatus. As a diuretic, it stimulates the flow of water and solutes. It is particularly helpful in removing urinary gravel. It aids the passage of the gravel while soothing the urinary tract and relieving pain associated with lithiasis. It has not been observed to dissolve a calculus once formed, however, it does stimulate its passage and provide relief from the pain of the stone passage.
- The diuretic action of gravel root is followed by a gentle tonification. This tonifying effect is also evident in a weakened, congested uterus or prostate E. purpureum may also promote the excretion of uric acid. Finally, the diuretic action of this plant lends it application in joint and dependent edema. Gravel root is indicated in difficult and painful urination with frequency, a sensation of obstruction, a feeling of heaviness in the supra-pubic area, burning urination and blood in the urine. Eupatorium purpureum is used in cases of hematuria, either due to cystitis or due to renal calculi.

- *E. purpureum* is also indicated in urinary incontinence. Stress incontinence, incontinence of pregnancy, incontinence in children and incontinence associated with inflammation may all be improved with administration of gravel root. In addition, impotence in men and uterine weakness (habitual abortion, prolapse, retroversion, and chronic inflammation) may resolve with the use of gravel root.

Pharmacy:

- Decoction: 1 tsp/cup water; bring to boil, simmer x 10 min, sig 1 cup TID[934]
- Tincture (strength unspecified): 1-2 ml TID[935]
- Fluid extract: (strength unspecified): ½-1 drams.[936]

Contraindications:

- Because of the pyrrolizidine alkaloids, internal use, particularly long-term, may lead to hepatotoxicity and should be avoided in patients with liver disease. Its use is also contraindicated in pregnancy due to its abortifacient effect and during breast feeding, again due to the pyrrolizidine alkaloids.[937]

Toxicity:

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[921] Mrs M. Greive, *A Modern Herbal: The Medicinal, Culinary, Cosmetic and Economic Properties, Cultivation and Folklore of Herbs, Grasses, Fungi, Shrubs, & Trees with Their Modern Scientific Uses,* Dover Publications, Inc, New York, 1971, Vol. I, p. 374.

[922] Ibid, pp. 374-5.

[923] Simon Mills, Kerry Bone, *Principles and Practice of Phytotherapy*, Churchhill Livingstone, New York, 2000

[924] Lininger et al, *Healthnotes*: *Clinical Essentials*, *Herb Monographs,* Prima Publishing, Rocklin, CA. 2001

[925] Ibid.

[926] S. Habtemariam, **"**Cytotoxicity and antibacterial activity of ethanol extract from leaves of a herbal drug, boneset (Eupatorium perfoliatum)*," Phytother Res*., Nov 14, 2000, Num. 7, pp. 575-7.

[927] David Hoffman, *The Holistic Herbal: A Herbal Celebrating the Wholeness of Life,* 3rd ed., Element, Shaftesburry, Dorset, 1990, p. 204

[928] John M. Scudder, *Specific Medication and Specific Medicines*, 15th ed, Eclectic Medical Publications, Sandy, OR, 1903.

[929] Finley Ellingwood, *American Materia Medica, Therapeutic and Pharmacognosy*. Ellingwood's Therapeutist, Chicago, 1919, pp. 438-9

[930] Ibid.

[931] Ibid.

[932] Ibid.

[933] No reference found.

[934] Hoffman, p. 204

[935] Ibid.

[936] Greive, Vol. I, p. 375.

[937] Francis Brinker, *Herb Contraindications and Drug Interactions*, 2nd ed., Eclectic Medical Publications, Sandy, Oregon, 1998, p.87

Euphrasia officinalis — Scrophulariaceae

Common name: Eyebright

Habitat: Europe and N. America in meadows and grassy places

Botanical description: Semiparasitic. Has a square leafy stem, simple or branched, leaves almost entirely opposite, ovate, downy, strongly ribbed, and furrowed. The flowers are axillary, solitary, abundant and inodorous with brilliant colors ranging from white to purple to yellow.

Parts used: Aerial parts (dried), gather in late summer while in bloom

Constituents:

- Iridoid glycosides[938] (aucuboside, aucubin, catalpol, euphroside, ixoroside)
- Flavonoids (rutin, quercetin, apigenin glycosides)
- tannin, acrid bitter principle, volatile oil, caffeic acid, ferulic acid, sterols, choline, fixed oils, fatty acids, vit. C, b-carotene, resin

Pharmacology: The plant has astringent properties that probably account for its usefulness as a topical treatment for inflammatory states and its ability to reduce mucous drainage. Aucubin has activity against hepatitis B *in vitro* and animal studies have demonstrated hepatoprotective, anti-tumor, anti-spasmodic, and anti-inflammatory effects.[939]

Medicinal actions: anti-inflammatory, anticatarrhal, astringent, vasoconstrictor of nasal and conjunctival membranes

Traditional Medicinal Uses:
Specific Indications and Uses: Acute catarrhal diseases of the eyes, nose, and ears; fluent coryza with copious discharge of watery mucus.[940] Secretion of acrid mucus from eyes and nose with heat and pain in frontal sinus.[941]

Cook described the leaves are mildly stimulating and astringing, and exert a somewhat tonic influence.[942] They act principally upon mucous membranes; and may be used to advantage in all excessive mucous discharges as in leucorrhea, gonorrhea, coughs, earache, and headache, catarrh of the bladder, and laxity of the bowels. They are best adapted to mild cases, but are reliable in their action.

- Gastrointestinal Conditions: Catarrhal diseases of the intestinal tract may be treated with Euphrasia.
- Ophthalmologic Conditions: Euphrasia was used with benefit as an infusion or poultice in catarrhal ophthalmia and
- Pulmonary Conditions: Euphrasia was considered to specifically influence the nasal membranes and lachrymal apparatus. In acute coryza with a profuse watery flow, it exerts its most specific action. Euphrasia was used to control the inflammatory, catarrhal and convalescent phases of measles.[943]

Current Medicinal Uses:
Euphrasia should be thought of as a remedy for any and all problems of the mucous membranes of the head and chest. Euphrasia combines astringent and anti-inflammatory actions to produce an anti-catarrhal action. Eyebright tea is taken internally to treat jaundice, respiratory infections, and memory loss. However, there is no scientific evidence that it is effective for these conditions.

- Ophthalmologic Conditions: Euphrasia is used for all types of eye inflammations and superficial injuries to the eye or surrounding tissue. Congestive conditions of the eye with profuse lacrimation respond well to Euphrasia internally and as an external poultice. Eye infections, weak eyes, dim vision, hay fever, colds, coughs, hoarseness, earache, headache with sinus congestion, basically all catarrhal conditions of the respiratory tract respond to Euphrasia. Like many herbs, Eyebright contains astringent substances and volatile oils that are antibacterial against Miccrococus aureus, E. coli, some fungi and other microbes. There is no scientific evidence that Eyebright is effective for treating eye diseases; Germany's Commission E recommends against using it whereas Simon Mills and Kerry Bone recommend it
- Pulmonary Conditions: Euphrasia vaso-constricts the vessels of the nasal and conjunctival mucous membranes which further contributes to its anti-catarrhal effects. The powerful anticatarrhal actions of Euphrasia make it useful in congested states of the sinuses and nose. Euphrasia is most helpful for acute thin watery discharge of the nose especially when accompanied by headache, earache, and/or eye pain.

Current Research Review:

- **Conjunctivitis:**[944]
    - Design: Prospective, open label, one-armed, multicentered, multinational cohort trial
    - Patients: 65 patients with inflammatory or catarrhal conjunctivitis.

- Therapy: Euphrasia rostkoviana Hayne single-dose eye drops: 1 qtt 1-5 x/day
- Results: Complete recovery in 53 patients (81.5%) and a clear improvement in 11 patients (17.0%). Slight worsening in one patient in the 2nd week of treatment. No serious adverse events. Authors concluded that Euphrasia single-dose eye drops can be safely and effectively used for various conjunctival conditions.

Pharmacy: Euphrasia combines will with Solidago, Hydrastis, Commiphora, and Sambuccus for conditions of the mucous membranes. It combines well with Ephedra as an external application for allergic conditions manifesting in the eyes.

Infusion: 1 tsp. herb/cup water; 1 cup TID

Tincture 1:2 fresh 60%EtOH; sig 1-4 ml TID

Compress: 1 tsp. dried herb in 1 pint water and boil 10 minutes, let cool. Moisten a compress (cotton wool, gauze, or muslin) in the lukewarm liquid, wring out slightly and place over the eyes. Leave compress in place for 15 min.

Contraindications: No information regarding contraindications is currently available.

Toxicity: No information regarding toxicity is currently available.

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[938] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p.375.

[939] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 376.

[940] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983

[941] Scudder J. Specific Medications and Specific Medicines.

[942] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985 p.

[943] Felter HW

[944] Stross M, Michels C, Peter E, et al. Prospective cohort trial of Euphrasia single-dose eye drops in conjunctivitis. *J Altern Complement Med* 2000;6(6):499-508.

Foeniculum vulgare

Umbelliferae

Common name: Fennel

- Flower and Fruit: the inflorescence is fairly large umbels almost 15 cm across on very irregular rays. The flowers are fairly small and usually androgynous. The petals are a rich yellow, broadly ovate and have an involute lobe at the tip. The style is very short and almost wart-like. The fruit is glabrous, brownish or greenish-gray, 6-10 mm long, somewhat cylindrical with blunt ribs and is strongly domed.
- Leaves, Stem, and Root: The plant is bieniial to perennial, 80-150 cm high, glabrous, sea-green to glaucus and has a strong spicy smell. The stem is erect, round, glabrous, smooth, and filled with latex. The lower leaves are petiolate and have long sheaths with the upper of these sitting on the sheaths, 3 or more pinnate and with a hair-like tip.

Parts used: Fruit

Constituents: volatile oil (up to 8% consisting of anethole, estrogole, fenchone), flavonoids (rutin, quercetin, kaempferol glycosides), coumarins, sterols, fixed oils, sugars

Pharmacology:

- The volatile oil relaxes the smooth muscles.
- Sterols and coumarins and has phytoestrogenic action

Medicinal actions: Stomachic, carminative, anti-inflammatory, phytoestrogenic, galactogogue

Medicinal uses:

- Gastroenterology: The volatile oil is spasmolytic, carminative, anti-inflammatory. The volatile oil relaxes the smooth muscles of the intestines, thus relieving griping and flatulence. Fennel is more relaxing and more easily tolerated than Cumin or dill seeds, and more stimulating than anise seeds. Fennel is often used with purgatives to allay the associated griping. Fennel is also anti-inflammatory in the intestines. Foeniculum is reported to enhance hepatic regeneration.
- Respiratory System Conditions: Foeniculum, via its volatile oils, will relax bronchial smooth muscle spasm and is thus a useful inclusion in bronchitis formulas.
- Gynecology: It is most indicated in amenorrhea and oligomenorrhea and is most efficacious as a hot infusion. The pleasant taste of fennel makes it a good inclusion in carminative and phytoestrogen formulas. Foeniculum stimulates milk production and combines well with Galega officinalis and Silybum marianum for this purpose. The concentrated oil of Foeniculum is abortifacient.
- Ophthalmology: The external application of fennel seed infusion may be used in cases of conjunctivitis and blepharitis.

- 5-7 g/day crushed or ground seeds for teas, tea-like products, and other galenic preparations for internal use
- Fennel syrup or honey: 10-20 g
- Compound fennel tincture: 5-7.5 g (= 5-7.5 ml)
- Infusion: 1-3 g/150 ml water BID, TID, ic
- Fluid extract (1:1, g/ml): 1-3 ml, BID, DID, ic
- Tincture (1:5, g/ml): 5-15 ml, BID, TID ic
- Native dry extract (3.9-4.9:1, w/w): 0.2-0.7 g BID,TID ic

Contraindications:

- Fennel preparations should not be used on a prolonged basis (several weeks) without consulting a physician or pharmacist. [948]

Toxicity/Side Effects: Skin irritation, N/V, seizures, pulmonary edema, liver lesions.

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[945] *PDR for Herbal Medicines,* Medical Economics Company, Montvale, New Jersey, 1998, p. 850.

[946] Ibid.

[947] Mark Blumenthal et al (eds), *Herbal Medicine: Expanded Commission E Monographs*, Integrative Medicine Communications, Newton, MA, 2000, pp. 127-8.

[948] Ibid, 128

Fucus vesiculosis

Common names: bladderwrack, fucus

Botanical description: Fucus is a sea algae. It is a brown alga with a regularly bifurcate thallus up to 1 m in length. Each branch has a midrib and paired air bladders.

Parts used: Thalli; usually dried, but may be eaten fresh

Constituents: Iodine in the form of organic salts and in iodo-amino acids; Mucilaginous polysaccharides (alginic acid, fucoidin, laminarin); Polyphenols; Lipids (inc. phosphatidylethanolamine and phosphatidylcholine)

Medicinal actions: metabolic stimulant, mineral supplement

Pharmacology: The iodine in *Fucus vesiculosus* is taken up by the thyroid gland and is utilized to make T4 and T3 hormones. This results in enhanced thyroid activity.

Traditional Medicinal Uses: The Eclectic physicians used Fucus for a small number of conditions that are now recognized to be associated with hypothyroidism such as obesity and fatty degeneration of the heart.

Current Medicinal Uses: Fucus has eaten for hundreds of years as a nutritious and flavorful vegetable. Since the 1700's, fucus has been used for its iodine content. The earliest treatment for goiter (enlarged thyroid due to iodine deficiency) was fucus. Iodine was isolated by distilling the fresh *Fucus* thalli. *F. vesculosus* is still used for this purpose although not commonly. The iodine content varies from plant to plant. Also the bound and unbound forms of the iodine in fucus makes for variable absorption and uptake by the thyroid gland. These factors have largely dissuaded practitioners from relying on *Fucus vesiculosis* as a remedy for secondary hypothyroidism due to iodine deficiency.

However, the use of *F. vesiculosis* in weight loss formulas is still quite popular today. By supplying iodine, thyroid function is stimulated and thus metabolism increases. One consequence of this is increased utilization of stored fat. The inclusion of fucus in weight loss formulas is questionable however since not everyone has iodine deficiency and subsequent hypofunction of their thyroid gland. An intake of greater than 150 g of iodine per day presents a danger of inducing and aggravating hyperthyroidism. Intakes less than this present these dangers in someone is not deficient in iodine.

Aside from its iodine content, fucus contains essential phospholipids and other minerals. It is a nutritious herb which may be useful in someone with mineral deficiencies. Fucus is also a useful adjuvant therapy in hypothyroidism.

Pharmacy: 1:5 tincture—5 ml TID; weekly maximum dosage is 100 ml.

- **Lithium carbonate:** this drug potentiates the hypothyroid action of large amounts of iodine (empirical).

- **GI bleeding:** due to the antithrombin effects of the fucan polysaccharides (in vitro)
- **Hyperthyroidism:** may be aggravated due to the iodine content (empirical)
- **Iodine induced goiter or thyroid deficiency:** due to exacerbation by iodine content
- **Partial thyroid removal or Hashimoto's thyroiditis:** may induce myxedema by increasing interthyroidal concentrations of iodine, blocking thyroxine formation (empirical).
- **Pregnancy or nursing:** due to possible overexposure of iodine to infant (empirical).
- **Prolonged use:** due to possible overexposure of iodine (empirical).

Toxicity: If used for a long period of time and/or in doses that are too high, hyperthyroidism or thyrotoxicosis are possible. Symptoms include palpitations, restlessness, insomnia, agitation, etc.

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[949] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 44

[950] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 43-44

Fumaria officinalis

Fumariaceae

Common name: Fumitory

Habitat: Native to Europe and the British Isles, Fumaria prefers fields, gardens, banks and ditches.

Botanical description: Fumaria is a small annual plant with pinnate leaves and clusters of slender tubular, two-lipped pink flowers. The fruit is globular and contains one seed. This plant flower throughout the summer.

Historical uses: The smoke from the burned plant has the power to expel evil spirits according to ancient exorcists of Europe. One legend claims that the plant was produced from vapors arising out of the earth, rather than from seed, hence one of its other common names, "Earthsmoke".

Parts used: Herba

Constituents:

- Isoquinoline alkaloids
- Flavonoids: including rutin
- Organic acids: fumaric acid
- Hydroxycinnamic acid derivatives: including caffeoylmalic acid

Pharmacology: No current information is available.

Medicinal actions:: Tonic, mild diuretic, laxative, alterative, gall-bladder trophorestorative

Traditional Medicinal Uses:

King considered Fumaria to be weakly tonic, slightly diaphoretic and aperient. It was very much used in cutaneous diseases, jaundice, obstructions of the abdominal viscera, scurvy, and in cases of debility of the digestive organs.[951]

Current Medicinal Uses: Fumaria is used in stomach, liver disorders, and skin conditions. Fumaria seems to specifically tonify the stomach, liver and gall-bladder.

- Dermatological Conditions: According to Culpepper, the juice of Fumaria mixed with the juice of Yellow dock makes a supreme healing wash for all manner of skin eruptions including scabs, pimples, blotches, eczema and wheals. This action may in part be explained by the antiseptic action of sanguinarine. Taken internally, Fumaria will help to heal the above skin conditions. This is due to the tonic effects on the liver, gall-bladder, and kidney.
- Gastrointestinal Conditions: Fumaria tonifies the digestive system overall (it is a bitter tasting plant).
- Hepatobiliary Conditions: Fumaria is a unique gall-bladder remedy in that it acts amphoterically on the gall-bladder and duct. If the duct is in spasm, Fumaria will relax the smooth muscles, alternatively, if the duct is too relaxed, Fumaria will enhance the contractility of the gall-bladder. Specifically, Fumaria is indicated in Spastic discomfort in the area of the gallbladder and bile ducts, as well as the gastrointestinal tract. [952] Although no placebo-controlled studies have been done, a number of empirical reports, clinical case reports and animal experimental studies have been published. Accordingly, in Germany, Fumaria officinalis is approved for the indication "colicky pain affecting the gallbladder and biliary system, together with the gastrointestinal tract". [953] Over time Fumaria will tonify the gall bladder, due to the enhanced stimulus responsiveness. Fumaria is slightly diaphoretic and aperient.

Current Research Review:

- **Gastroenterology:**
  - **Hepato-biliary pathology:**[954] Abstract is unavailable on Medline (11/17/02).

Pharmacy: Infusion: 1-2 tsp. herba/cup water; sig TID
Tincture: 1:5 25% EtOH; sig 1-2 ml TID

Toxicity: None known.

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[951] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[952] Ibid

[953] Hentschel, C. et al: [Fumaria officinalis (fumitory)--clinical applications]. *Fortschr Med*. 1995 Jul 10;113(19):291-2.

[954] Dubarry JJ. Clinical study on the use of fumitory nebulizer in hepato-biliary pathology. *J Med Bord* 1967;144(6):918-20.

Galega officinalis

Leguminosae

Common names: Goat's rue, French lilac

Habitat: The plant is native to central, southern and eastern Europe and cultivated elsewhere.

Botanical description: An erect branched plant that grows to a height of 1.5 m. The leaves are 13-15 oblong, marginate leaflets. White or light blue papilionaceous flowers in dense racemes bloom between July and August.

Parts used: aerial plant

Constituents:

- Galegine (isomyleneguanidine) [up to 5% in the seeds]
- Peganine alkaloid
- Galegine (=isoamyleneguanidine), its 4-hydroxyderivative and peganine
- Tannins, Flavonoids (Flowers), Saponins, Chromium salts

Medicinal actions: Hypoglycemic, galactagogue, diuretic, vermifuge

Pharmacology:

The hypoglycemic effect of Galega, specifically galagine, has been demonstrated in alloxan-diabetic and healthy rats with either the aqueous or alcoholic extract.[955] Galagine blocks succinic dehydrogenase and cytochrome oxidase, thus increasing anaerobic glycolysis and decreasing gluconeogenesis.[956] The hypoglycemic effect occurs while the glycogen level in the liver and myocardium rose.[957] High doses of Galega can cause intoxication due to the guanidine derivatives. Peganine also has hypoglycemic actions.[958] Biguadines inhibit glucose absorption from the intestine.[959] The chromium salt content (3.7 ppm) may also contribute to the anti-diabetic action of *Galega officinalis*.

Galega also promotes lactation, possibly through stimulaion prolactin from the adenohypophysis.[960]

A gel-fractionated herbal extract from Galega officinalis has demonstrated in vitro to have an inhibiting and disaggregating effect on platelet aggregation.[961] Antibacterial activity has also been described.

Traditional Medicinal Uses:

Historically, dating back to Culpepper, Galega has been used as a vermifuge and diaphoretic. Galega was considered to be effective in eliminating a variety of parasites. This use is not common today.

King observed that Galega has a disagreeably bitter taste imparts a dark-yellowish color to the saliva. Various properties were attributed to it in former times, in which it was considerably employed as a vermifuge, as a stimulant to the nervous system, as a diuretic and tonic in typhoid conditions, and is also stated to have been of service in the plague, as well as to stimulate the lactiferous vessels to an increased secretion during the period of lactation. It was, seldom, if ever, prescribed in practice.

Current Medicinal Uses:

- Dermatologic Conditions: Alcoholic extracts of Galega were tested on Gram + and Gram - bacteria as the plant was claimed to hasten skin healing after surgery. Ethanolic (60%) extract exhibited significant inhibition on growth of both Gram + and Gram - bacteria.[962]
- Endocrine Conditions: Galega is used in the treatment of diabetes—type I and II. No human studies on the hypoglycemic effect have been performed although the hypoglycemic effect of the seeds has been demonstrated in animals. The hypoglycemic effect, while significant, should not initially replace insulin therapy. The toxic effects of high doses of Galega limit the extent of its hypoglycemic action. Nonetheless, it is an important part of an overall anti-diabetic therapeutic program.
- Gynecological Conditions: Galega is also a very effective galactogogue. It will promote lactation when absent and will increase the amount of milk produced significantly. Galega is used in Europe by veterinarians for stimulating milk secretion.

Pharmacy: Infusion: 1.5 tsp. / cup; 1 cup TID (1 tsp. = 1.3 gm)
1:5 tincture – 2 ml TID; 40 ml = weekly maximum

Drug Interactions: No information is currently available from the selected resources.

Contraindications: Galega may be contraindicated during pregnancy.[963]

Toxicity: No information is currently available from selected resources.

[955] Evans WC *Trease and Evans' Pharmacognosy*, 14th ed., (Philadelphia: WB Saunders Co Ltd), 1996:440.

[956] Oliver-Bever B, Zahnd GR, *Quart. J. Crude Drug Res*, 17,1979:139-96.

[957] Shukyurov DZ, Guseinov, Dya, and Yuzbashinskaya PA *Dokl Akad Nauk Azer. SSR*, 30, 1974:58; *Chem. Abstr.*, 82, 1975:106392.

[958] Evans WC, *Ibid*, 440.

[959] Oliver-Bever B, Zahnd GR, *Ibid*, 139-96.

[960] Kenner, D and Requena, Y *Botanical Medicine: A European Professional Perspective*, (Brookline, MA: Paradigm Publ.), 1996:1994.

[961] Atanasov AT. Inhibiting and disaggregating effect of gel-filtered Galega officinalis L. herbal extract on platelet aggregation. J Ethnopharmacol. 2000 Mar;69(3):235-40.

[962] Pundarikakshudu K. Anti-bacterial activity of Galega officinalis L. (Goat's Rue). J Ethnopharmacol. 2001 Sep;77(1):111-2.

[963] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 224

Gallium aparine — Rubiaceae

Common names: Cleavers, bed-straw, gallium

Habitat: Common in gardens and in moist, shady areas of forests, often near a body of water.

Botanical description: An annual plant with a weak stem, which climbs and clings due to the hooked trichomes on the leaves and stems. The stem is hairy at the joints and grow to a height of 12-24 in. The leaves are linear to lanceolate, 1-2 cm. long, and tapered at the base. They have rough margins and midrib, and are arranged in whorls of 6-8 leaves. Flowers are white, arranged in loose cymes found at the axil of the leaves. The calyx is open 5 lobes, corolla is tube-like with 4 lobes. The fruit is 4-6 mm., olive green to purple and covered with hooklike bristles. Flowers May to June.

Part used: Herba

Historical usage: The seeds have been dried and roasted as a coffee substitute. The stems have been used as fiber for making nets (Greece and Sweden).

Constituents: [964]

- glycoside: asperuloside
- gallotannic acid
- citric acid
- volatile oil (small amount: coumarins, rubichloric acid and asperuloside glycosides, enzymes, tannins, galiosin

Pharmacology:
Galiosin, an anthraquinone glycoside, and other glycosides and tannins and flavonoids may constitute the major active constituents of cleavers. Little research has been conducted on this plant, but preliminary lab experiments suggest it may have antispasmodic activity.[965]

Medicinal actions: Diuretic, Vulnerary, Astringent (mild), Anti-lithic, Lymphatic cleanser, refrigerant

Traditional Medicinal Uses:
Specific Indications and Uses.—Dysuria, painful micturition; renal and cystic irritation with burning; diuretic for inflammatory states of the urinary tract, and for febrile conditions; "nodulated growths or deposits in skin or mucous membranes"[966]
Cook considered this herb to be a peculiarly soothing relaxant, acting upon the kidneys and bladder and is somewhat soothing to the nervous system.[967]

- Dermatologic Conditions: King noted that Gallium had been found useful in many cutaneous diseases, such as psoriasis, eczema, lichen, cancer, and scrofula, and is more particularly useful in these diseases when they are combined with a strumous diathesis.
- Genitourinary Conditions: Cook observed that Gallium increased the watery portion of the urine which decreased discomfort in an irritated system. He noted that its action is light and diffusive being suited for acute cases. However, he placed it among the valuable agents in all forms of scalding urine, as in oxalic acid gravel, irritation at the neck of the bladder, and the first stages of gonorrhea.
  To these actions King added that Gallium was an effective treatment for suppression of urine, calculous affections, inflammation of the kidneys and bladder, and in the scalding of urine in gonorrhea.
- Inflammatory Conditions: King used Gallium freely in fevers and all acute diseases. Growth or deposits of a nodular character in the skin or mucous membranes are regarded as indications for its use.
- Topical Applications: King use the cold infusion as a wash several times a day in removing freckles, lepra, and several other cutaneous eruptions (continued for 2 or 3 months in case of freckles).

Current Medicinal Uses:

Gallium has a tropism for the pelvis and urinary tract. It is most commonly thought of a lymphagogue. It increases lymphatic drainage, breaks up lymphatic congestion- especially in the pelvis-, and in general is a lymphatic tonic. The enzymes contribute to this action. The enzymes are only preserved in the glycerite or juice.

- Dermatologic Conditions: Gallium is depurative (a strong alterative) which makes it useful in the treatment of dry skin conditions such as eczema and psoriasis. For skin diseases, Gallium combines well with Arctium, Rumex and Taraxacum.
- Genitourinary Conditions: Gallium is also demulcent for the urinary tract, giving it indication in cystitis, urethritis, prostatitis and pyelonephritis. Additionally, Gallium can break up renal stones [its relative, Rubia tinctoria is best known for this]. Gallium is a soothing and relaxing diuretic and therefore reduces edema caused by water retention of kidney origin.

- Inflammatory Conditions: Gallium is a mild diaphoretic. Gallium reduces edema of the joints as in rheumatoid arthritis. Gallium has a pleasant taste (similar to black tea) and is a useful addition to children's cold/flu remedies. Unlike Phytolacca, another lymphatic botanical, Gallium has no toxic effects on the CNS or GI and therefore is a good way to treat the lymphadenopathy and fever of infections. Gallium popsicles are a medicinal treat for kids.

Current Research Review

- Search of Medline revealed no human studies as of November 2002.

Pharmacy: Note: hot water, aged plant, and dried plant all decrease the medicinal value of the plant; fresh is best.
Infusion: 1-2 tsp./cup water; steep 10 min; sig 1-2 cups TID [1 tsp. = 1.7 g]
Fresh juice: preserve with 50% glycerin; sig 5-15 ml BID
Fluid extract: 1:1 25% EtOH; sig 2-4 ml TID
Specific tincture 1:3 25% EtOH; sig 5-7 ml TID
Fresh pulp as a poultice

Contraindications: It is contraindicated in diseases of a passive character, on account of its refrigerant and sedative effects on the system.[968]

Toxicity: None

Grifola frondosa, Lentinus edodes, Ganoderma spp.

Common names: Maitake (G. frondosa), Shitake (L. edodes), Reishi (Ganoderma)

Habitat: Fungi which are largely log cultivated.

Botanical description: These fungi have the appearance of large mushrooms.

Parts used: Fruiting bodies

Constituents: Polysaccharides: beta 1-6 glucan, beta 1-3 glucan; Ascorbic acid analogs; Protein; Phosphorus
Ganoderma spp

- triterpenoids (ganoderic acids)
- sterols, coumarin, mannitol, polysaccharides, and

Pharmacology:

These mushrooms all contain very high amounts of polysaccharides. These polysaccharides appear to be the constituents responsible for immune modulation. Specifically, the polysaccharides induce interferon production, thus disrupting viral replication and inhibiting bacterial infection, including Staphylococci, Streptococci, and Bacillus pneumonia. The polysaccharides also increase RNA and DNA in bone marrow, thus increasing lymphocyte production.

Ganoderma lucidum:

The acidic protein bound polysaccharide, GLhw-02 exhibited antiherpetic activity with 50% effective concentrations (EC50) in vitro[969].

Extracts with Ganoderma spp have been demonstrated to augment immunoglobulin G, expand the memory of T-cells and increase IL-1 and IL-2.

Antitumor activity: The effects of extracts from Ganoderma lucidum spores on the growth of human cervix uteri tumor cells as well as on the cell cycle and intracellular calcium level were investigated. One form of the extract of cracked open spores was shown to be capable of blocking the cell cycle at the transition from G1 to S phase and inducing a marked decrease of intracellular calcium level. . These results imply that (1) the breaking of G. lucidum spores improves the release of cytotoxic activity and (2) the effective extract might influence the cell cycle and cellular signal transduction by altering the calcium transport system [970].

Antiplatelet activity: Ganodermic acid S (GAS), isolated from the Chinese medicinal fungus Ganoderma, exhibits inhibitory effects on platelet responses to various aggregating agonists. GAS also participated in potentiating the response of human platelets to prostaglandin PGE_1. [971] The crude extracts of the Ganoderma lucidum is considered not to have untoward antiplatelet effect in vivo despite the high contents of adenosine.[972] However, the inhibitory effect of Ganoderma lucidum on platelet aggregation in 15 healthy volunteers and 33 patients with atherosclerotic diseases showed that the first and the second phase of aggregation of platelets of the healthy volunteers were obviously inhibited (P less than 0.01) when watery soluble extract of Ganoderma of different concentrations was added to the platelets in vitro. The inhibitory effect was related to dosage.[973, 974] The apparent opposite findings in these studies may be due to the preparation of the extract.

Ganoderic acids may lower blood pressure as well as decrease LDL cholesterol. These specific triterpenoids also help reduce platelet stickiness.[975]

Prolonging life: In this study, a controlled protocol was conducted in which New Zealand Black/White F1 mice were fed standard chow with prednisolone (0.5 mg/kg/day) or Ganoderma tsugae extract, commencing at 2 months of age. It was found that the F1 mice responded well to Ling Zhi extract. Ling Zhi improved the survival rate of lupus mice, decreased the amount of proteinuria, decreased serum levels of anti-dsDNA autoantibody, and showed evidence of decreased perivascular and parenchyma mononuclear cell infiltration in vital organs. [976]

Grifola frondosa:

Grifolan (a polysaccharide from *Grifola frondosa*) stimulates macrophage production of tumor necrosis factor-α which regulates immune and inflammatory responses such that the host is protected against infection and cancer.

A polysaccharide fraction in Maitake, beta 1-6 glucan (most other mushrooms only contain beta 1-3 glucan) potentiates the activity of macrophages, NK cells, cytotoxic T cells and increases the synthesis of interleukin-1 and lymphokines.

Lentinus edodes:

The polysaccharides of Lentinus have antitumor effects and increase phagocytic activity. Lentinan activates NK cells involved in tumor suppression. In addition, lentinan has been shown to inhibit immunosuppressive cytokines, increase antibody production, increase opsonin production, and activate macrophages. [977]

Medicinal actions: Immune stimulation/modulation, anti-viral, anti-bacterial, anti-cancer, anti-hypertensive
Summary of effects of Ganoderma lucidum according to Christopher Hobbs: [978]
Analgesic, Anti-allergy, Anti-inflammatory, Antibacterial, Antioxidant, Antibacterial, Antioxidant, Antitumor, Antiviral, Hypotensive, Cardiotonic (lowers cholesterol but has no effect triglycerides, improves coronary artery perfusion), CNS depressant, Enhanced NK cell, Expectorant and antitussive, Anti-HIV activity, Hepatoprotective

Traditional Medicinal Uses: No information is available from the selected resources.

Current Medicinal uses:

The overall indications for these potent immunostimulatory mushrooms include many conditions with altered immune and adrenal (endocrine) function. These include: chronic fatigue immunodeficiency syndrome, HIV infection and AIDS, cancer, Lyme disease, hypertension, high cholesterol, hyperglycemia and diabetes.

- Cardiovascular Conditions: Maitake and Ganoderma have anti-hypertensive action. Lentinus does not lower elevated blood pressure, but shares with the other mushrooms the ability to lower cholesterol, triglyceride, and phospholipid levels.
- Endocrine Conditions: These mushrooms are also adaptogens, and thus enhance physiological resistance to stress. All of the mushrooms can lower high blood sugar. Reishi has analgesic, nervine relaxant, anti-allergic (inhibits histamine release and all types of hypersensitivity reactions, is an antioxidant, and regenerates liver tissue (i.e. in liver necrosis and hepatitis).
- Hepatobiliary Conditions: 355 patients with hepatitis B showed improvements in liver enzymes and improved symptoms. G. lucidum is more effective in cases where there is no severe liver impairment. [979]
  Lentinus formulations that contain the powdered mycelium (called LEM) may help decrease serum liver enzyme levels. These findings came from an open study of persons with hepatitis B using 2 grams TID of LEM. One marker of hepatitis B infection in the blood, HBeAg, disappeared in 14% of the patients in this study. Given the preliminary nature of the research, more information is needed to determine if LEM is effective for hepatitis. [980]
- Immune Conditions: Maitake mushroom, along with Shitake (Lentinus edodes) and Reishi mushroom or Ling Zhi (Ganoderma) are potent immunostimulators. They are deep immune tonics, most indicated in the treatment of chronic immune disturbances rather than in acute states of immune dysfunction.
  Japanese physicians use these immune stimulating mushrooms in their treatment of cancer. In fact, in Japan, extracts from three different mushrooms: Lentinus extract, Shizophyllum, and Coriolus are listed among the most recommended anti-cancer drugs and are used in conjunction with chemotherapy.[981, 982]
  Maitake, called the king of mushrooms because it is so large, is believed by some to be the most potent of the immune stimulating mushrooms. It is very effective in oral doses for the treatment of tumors. Maitake is also being researched for its ability to prevent HIV from killing CD4 cells. The beta 1-6 glucan inhibits the cellular modulation caused by HIV infection and thus prevents subsequent cellular destruction (in-vitro). Maitake has been studied in-vivo in persons infected with HIV and the results indicate increased CD4 counts and improvement of symptoms.
  Ganoderma inhibits the release of histamine preventing and alleviating types I, II, III, and IV allergic hypersensitivity reactions. Ganoderma has been observed clinically to stabilize immunoglobulin levels, reducing the number of excess antibodies and boosting low levels. [983]. Ganoderma may help reduce food sensitivities for this reason.
- Infectious Conditions: Case reports from Japan are also suggestive that lentinan from Lentinus edodes is helpful in treating individuals with HIV infection. However, large-scale clinical trials to confirm this action have not yet been performed.[984, 985]
- Pulmonary Conditions: Clinical studies in China of Ganoderma with over 2000 patients demonstrated improvements in a variety of pulmonary symptomologies. Patients with bronchial asthma showed the most improvement.[986]

Current Research Review

Ganoderma spp

- **Chinese medicine:**
  - **Pulses:**[987]
    - Design: Randomized controlled clinical trial
    - Patients: Human subjects
    - Therapy: Extract of three Chinese herbs: Panax ginseng, Panax quinquefolium roots, and Ganoderma lucidum.
    - Results: Each herb has a specific effect on the Fourier components of the pulse, and is in agreement with traditional Chinese medical descriptions.
- **Infectious diseases:**
  - **Herpes zoster:**[988]
    - Design: Clinical trial
    - Patients: Four patients: two with postherpetic neuralgia recalcitrant to standard therapy and two with severe pain d/t herpes zoster infection.
    - Therapy: Hot water soluble extracts of Ganoderma lucidum (GI), 36-72 g dry weight qd
    - Results: Dramatic decrease in pain.
- **Cardiology:**
  - **Platelet aggregation:**
    - Study 1:[989]
    - Design: Clinical trial
    - Patients: Five volunteers with hemophilia A, positive HIV antibody, and reversed helper/suppressor T-lymphocyte ratio.
    - Therapy: Extract of Ganoderma lucidum (GL-P), containing 150 mg adenosine/100 gm extract. Estimated sig: 1.35 mg adenosine qd
    - Results: Platelet aggregation tests before and after the trial showed no significant change.

Study 2:[990]

- Design: Clinical trial
- Patients: Fifteen healthy volunteers and 33 patients with atherosclerotic disease.
- Therapy: Ganoderma lucidum (GL) 1 g TID x 2 weeks
- Results: Platelet aggregation induced by ADP in final concentration of 2 mumol/L and 3 mumol/L was inhibited, with maximum aggregation inhibition rates 31.49% and 17.7%, respectively. Length and weights (wet and dry) of the extracorporeal thrombi were reduced after oral administration of GL. Authors concluded that GL may be an effective inhibitory agent of platelet aggregation.

Lomatium spp.

- **Infectious diseases:**
  - **HIV:**

    Study 1: [991]
    - Design: Placebo-controlled clinical trials, phase I/II
    - Patients: Ninety-eight HIV-positive patients without current opportunistic infections, CD4 levels of 200-500 cells, 18-60 yo.
    - Therapy: Trial 1: 2,5, or 10 mg of lentinan (beta 1□3 glucan isolated from Lentinus edodes) or placebo iv 1x/wk x 8 wks. Trial 2: 1 or 5 mg of lentinan or placebo iv 2x/wk x 12 wks.
    - Results: Patients in the study have shown a trend toward increases in CD4 cells and in some patients neutrophil activity. Because of the small numbers, these values do not have statistical significance. Authors recommended a long-term clinical trial of lentinan in combination with didanosine (ddI) or zidovudine. In trial 2, ten patients with elevated p24 levels, eight on lentinan and two on placebo had decreased p24 levels. Of these decreases, those with lentinan and one with placebo were marked.
    - Study 2:[992]
    - Design: Randomized controlled multicenter clinical trial, phase II.
    - Patients: One hundred and seven HIV positive patients with CD4 levels of 200-500 cells/mm3.
    - Therapy: Didanosine, 400 mg qd (BID) po x 6 wks, then 2 mg lentinan iv was added/wk x 24-80 wks. Contol – ddI only.
    - Results: Significant increases in CD4 levels up to 38 weeks in experiment group, whereas ddI alone was significant at the 5% level at 14 weeks.
- **Oncology:**
  - **Gastric, colorectal, and breast cancers:**[993]
    - Design: Randomized controlled clinical trial with envelope method
    - Patients: Patients with advanced or recurrent stomach, colo-rectal, and breast cancer.
    - Therapy: Lentinan (LNT) – a purified polysaccharide extracted from Lentinus ededes. For GI cancer: LNT iv 1mg qd 2x/wk or 2 mg qd 1x/wk in combination with mitomycine C +5-FU (MF) or tegafur (FT).
    - Results: Life span prolongation and lower incidence of abnormal value on hematological survey was observed for GI cancers. For breast cancer - study was underway; life span prolongation was observed. as well.
  - **Breast cancer:**[994]
    - Design: Controlled clinical trial
    - Patients: Patients with advanced or recurrent breast cancer who received bilateral oophorectomy and adrenalectomy
    - Therapy: Lentinan
    - Results: Improvement of prognosis in experimental group, compared with the control

Pharmacy:

Vit. C appears to enhance the absorption of these immunostimulatory polysaccharides. Vit. C reduces the high molecular weight of mushroom polysaccharides, reducing their viscosity and hence increasing their bioavailability.

5-10 g powder daily in divided doses. Ten grams daily of the dried Maitake powder (equivalent to 200g of fresh mushroom) is typical.

Drug Interactions: The water extract of Ganoderma lucidum diminished the stimulant effect of caffeine due to CNS depressant activity and reduced the sleeping time induced by hexobarbital, possibly be increasing hepatic metabolism (both studies in mice).[995]

The protein bound beta-glucan D fraction of Grifola increased the inhibitory effect of mitomycin C on transplanted hepatic carcinoma in mice.[996]

Contraindications: No information is currently available from the selectred resources.

Toxicity: Doses of Maitake as high as 30g have been studied for side effects and only constipation was noted. Some people experience mild diarrhea when beginning oral supplementation, and this soon resolves.

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Gaultheria procumbens

Common name: Wintergreen

Habitat:

Botanical description:

Part used:

Historical use:

Energetics:

Constituents [997]

- Volatile oil: chief components - methyl salicylate (96-98%), additionally, oenanthic alcohol (n-heptan-1-ol) and its ester (which contributes to the odor of the volatile oil)

Pharmacology:

Oil of Wintergreen is high in methyl salicylate. Methyl salicylate can be converted into salicylic acid in the body and is an ingredient in Peat baths and in many topical analgesics.

Skin absorption of methyl salicylate was investigated in 10 volunteers. [998] By use of bathing concentration of 0.03 g/l of methyl salicylate, plasma levels of 220-820 ng/ml were found 1 h after beginning, and 46-193 ng/ml after 6 h. The half-time of elimination in urine after methyl salicylate bathing is (as with injected salicylic acid) between 2.4 to 4 h.

Medicinal actions: stimulant, aromatic, astringent, carminative, analgesic

Traditional Medicinal Uses:
Specific Indications and Uses: Cystic and prostatic irritation, undue sexual excitement, renal inflammation (early stage).[999]

The Eclectics used the infusion as an astringent in chronic mucous discharges, as a stimulant in cases of debility. Cook described Gaultheria as relaxing and gently stimulating, very diffusive and transient.

- Dental Conditions: The oil allays the pain of carious teeth.
- Gastrointestinal Conditions: The essence of wintergreen was used as a carminative, particularly by the Physiomedicalists to relieve flatulence and wind colic.
- Genitourinary Conditions: The Eclectics used Gaultheria as a diuretic in dysuria. Both the infusion and the essence were used to relieve irritation of the urethra and bladder, and to the incipient stages of renal inflammation. Tubal nephritis is alleged to have been arrested by it even when examination has revealed in the urine the presence of red blood cell casts.
  Cook indicted its effects on the kidneys when used as a cold preparation.
- Gynecological Conditions: King stated that Gaultheria has emmenagogue, although did not elucidate on this action.
- Male Conditions: Scudder recommended Gaultheria in spermatorrhea with increased sexual excitement, and as a sedative in irritation and inflammation of the urethra, prostate gland and bladder.
- Musculoskeletal Conditions: Gaultheria was recommended as a valuable remedy for articular and muscular rheumatism.

Current Medicinal Uses:
- Musculoskeletal Conditions: The oil is administered externally as an analgesic and rubefacient for the treatment of rheumatoid arthritis and related conditions. [1000] No clinical trials have been performed.

Pharmacy:

Contraindications:
Internal use can cause gastrointestinal irritation and should be avoided by lactating mothers due to the passage of potentially toxic compounds in breast milk.[1001]
Toxicity: Large doses of it administered internally have caused death by producing inflammation of the stomach. [1002]

Gelsemium sempervirens

Loganiaceae

Common names: Yellow jasmine, wild jasmine, yellow jessamine, wild jessamine, wild woodbine

Habitat: Native to southern USA.

Botanical description: The root is tortuous, brown and smooth with a thin bark and woody center showing broad medullary rays. The rhizome is less tortuous and has a noticeable pith and purplish longitudinal lines on the bark. *This plant is not to be confused with the ornamental yellow flowering jasmine.*

Part Used: root

Constituents: Indole alkaloids: gelsemine, gelsemoidine, sempervirine, gelsemicine; Iridoids; Coumarins; Tannins

Pharmacology: The indole alkaloids act similarly to nicotine and coiine in that they first stimulate, then depress neural function, especially in the medulla oblongata and spinal ganglia.[1003] The alkaloids have an overall CNS depressant action thus slows and inhibits nervous innervation with resultant decreased end-organ activity.

Medicinal actions: Sedative, hypnotic, diaphoretic, antispasmodic, febrifuge, anodyne, hallucinogenic

Traditional Medicinal Use:

Specific Indications and Uses: Gelsemium is indicated by bright eyes, contracted pupils, flushed face, great beat, and restlessness; mental irritability; insomnia, with excitation; pain over the whole head; dysuria, with scanty secretion of urine; irritation of the urinary tract; pinched, contracted tissues; thin, dry, unyielding os uteri, with dry vaginal walls; arterial throbbing and exalted sensibility; chilly sensations upon motion; hyperemia; and convulsions;[1004] the patient is restless and uneasy"[1005].

The Eclectics observed Gelsemium to powerfully impress the nervous system and minor increases in dosage were noted to have significant effects: Small, medicinal doses relax the muscles, especially the levator palpebrae, and allay nervous irritation. Larger doses impart a sense of relaxation usually experienced by a tendency of the jaw to drop and difficulty in controlling the eyelids. The continued administration of Gelsemium affects the spinal centers and medulla causing marked feebleness of muscular movements, blurred vision, and vertigo. Reflex action is depressed with the loss of muscular power, and confusion. Muscular paralysis usually occurs prior to loss of sensation. Consciousness may be lost, but it is usually retained even when toxic doses have been taken. When fatal, however, dissolution is usually preceded by loss of consciousness.

With administration the pulse slows to 30 or 40 beats, and there is a marked decrease in temperature. Respiration is at first quickened, then slowed, breathing becomes shallow, and the action upon the heart appears to depend upon the effect upon respiration. As a rule, the mental function is not directly affected by it.

- Dental Conditions: Toothache, from peridental inflammation, was treated with Gelsemium as well toothache that occurs specifically with pregnancy.
- Dermatologic Conditions: By blunting peripheral sensation, Gelsemium was used to decrease the itching of eczema and locally in other forms of pruritis.
- EENT Conditions: Gelsemium was used for conjunctivitis, muscular asthenopia (eyestrain secondary to imbalance in extrinsic ocular muscles), iritis, and in tinnitus.
- Gastrointestinal Conditions: Conditions from inflammatory states of the digestive tract, especially in the lower bowel, indicated Gelsemium. It was also used to relieve the tenesmus of dysentery and other spasmodic conditions of the bowels. Gelsemium was particularly indicated in the presence of gastrointestinal irritation and irritative dyspepsia, with a feeling of rawness, heat, and pain, and a sensation of knotty contraction in the stomach.
- Genitourinary Conditions: Inflammation of the kidneys, bladder or urethra, was commonly treated with Gelsemium as it was observed to quickly relieve the tenesmic pain, urinary retention, etc., of irritative catarrhal conditions of the bladder. In spasmodic conditions of the urinary tract with scanty flow of urine and irritation, Gelsemium was frequently indicated. Gelsemium was also used to produce relaxation during the passage of renal calculi. Gelsemium was given previously to or with an indicated diuretic, when urinal suppression is due to renal or cystic irritation (not congestion), unless specially contraindicated.

  One of its early uses was for gonorrhea, for which it was thought to be almost specific, particularly in the early inflammatory stages where it was given with Aconite and Cannabis indica for this purpose.
- Gynecological Conditions: In the pelvic disorders of women it was a favorite Eclectic remedy. Its powerful antispasmodic action made it especially applicable to spasm of the female reproductive tract.. With the specific indications, it was used to treat ovaritis, metritis and salpingitis. Severe dysmenorrhea with colicky pains and uterine colic were reported to be promptly relieved by large doses.

  Gelsemium was used to relax a rigid os uteri, with thin, unyielding edges, and a dryness. In fact, it was observed to relax all sphincters and, by rectifying such complications, was used to facilitate labor. Gelsemium, alone or combined with Pulsatilla, was

invaluable to overcome the marked restlessness caused by some parturients, and Gelsemium was applied to slow a labor that had begun before the cervix was ready, particularly when the woman was excessively excitable and nervous.

- Infectious Conditions: In the treatment of exanthemata this remedy was often indicated by the great heart beat and restlessness. It was nearly always called for in cerebro-spinal meningitis. In the past epidemics of influenza (la grippe) probably no one remedy was more extensively used by the Eclectic physicians.
- Inflammatory Conditions: Gelsemium was first employed in a variety of febrile diseases, such as bilious, remittent, typhoid and intermittent fevers. In these conditions, it was found to have such a marked antipyretic action that it rapidly rose in favor among the earlier Eclectics. The Eclectic fathers regarded it as the only agent capable of subduing fever in 2 to 20 hours, without the least possible injury to the patient. In doing so it was observed to quiet all nervous irritability and excitement, equalize the circulation, promote perspiration, and rectify the secretions. They also believed it adapted to any stage of inflammation, while the later Eclectic practitioners believed it best adapted to the earlier stages of fevers.

  Gelsemium was considered best suited to sthenic cases with determination of blood to nerve centers and a remedy for elevation of temperature, whether from cold, pneumonia, pleurisy, or even puerperal fever. Chilly sensations upon moving the body, usually followed by the high temperature and the stage of excitation called for it.

  In the fevers and inflammations of children Gelsemium was applied to prevent convulsions.
- Musculoskeletal Conditions: gout and rheumatism, in the latter disease aiding some of the antirheumatic remedies. Externally, Gelsemium will be found of service in neuralgic and rheumatic pains.
- Neurological Conditions: Therapeutically, Gelsemium was described as acting on the cerebrospinal nerve centers, diminishing the blood supply to them in inflammatory conditions of the head and spine, thereby preventing spasmodic action. It was considered an antispasmodic second to none. However, it was never the remedy when congestion was present. Gelsemium was seen to possess control over the nervous system, removing nervous irritability more completely than an other known agent. Other nervines, such as Passiflora, were used to increase its effect on the nervous system. A particular pattern in the nervous patient was treated with Gelsemium: grouchy, touchy, every impulse and feeling, whether painful or pleasant, is magnified or accelerated, and the contracted pupil is not always specially noticeable.

  Gelsemium was used to treat virtually any type of neuralgia with powerful nervous twitching, convulsions with cramping rigidity of the muscles, tetanus, insomnia, pain with nervous tension and hyperemia such as headache especially from eye strain as in migraine, delirium tremens, mania and vertigo.
- Pulmonary Conditions: Gelsemium has been used quite extensively in whooping-cough, spasmodic cough, spasm of the glottis, asthma, and the cough of hysteria. Bronchitis, laryngitis

Current Medicinal Uses:

Gelsemium is a very strong botanical and must be used with caution. However, it is very effective for treating neuralgia, nervous excitement and anxiety, insomnia, gastroenteritis and diarrhea. General indications for its use include conditions of excess with acute onset.

- Gastrointestinal Conditions: Pain associated with visceral spasm responds well to Gelsemium such as colic of the gall bladder, abdominal pain due to gastroenteritis, diarrhea,
- Genitourinary Conditions: Pain associated with urinary tract spasm responds well to Gelsemium, which can occur with nephritis or cystitis.
- Gynecologic Conditions: The antispasmodic action of Gelsemium makes it an excellent remedy for dysmenorrhea. Gelsemium is extremely useful in labor to relax a rigid os and to help laboring women move through the fear and anxiety that can hamper effective contractions. In regard to the cervical os, difficult PAP procedures can be eased by drop doses of Gelsemium.
- Inflammatory Conditions: Gelsemium is traditionally used as an analgesic. Indications include pain associated with inflammation such as arthritis, chondritis, tendinitis and myalgia. Gelsemium is most indicated in states of acute inflammation such as fever and can even be used for peridontal pain.
- Neurological Conditions: Gelsemium acts as an anodyne when the pain is associated with nervous tension or irritability as well as pain associated with vascular spasm such as migraines such as a throbbing headache. Gelsemium has also been used to convulsions and some cases of neuralgic pain, particularly trigeminal neuralgia (tic de la roux) and dental pain. Given in small drop doses, Gelsemium helps to calm someone who is fearful and anxious.
- Pulmonary Conditions: The antispasmodic effect of Gelsemium can also relax respiratory smooth muscle as in an asthmatic attack. Gelsemium has been described by some herbalists as having a tropism for the respiratory system

Pharmacy: King noted that as soon as its physiological effects are observed, the remedy should be discontinued.[1006]
1:5 tincture (fresh plant, 60% EtOH): sig 0.3–1 ml TID or smaller doses more frequently (q 3 hr.) (Alschuler)
1:10 tincture: start with 5 gtt and titrate up to 15 gtt if needed. (Alschuler) Weekly maximum dose=5 ml

Drug Interactions: May interact with pain medications or depressants

Contraindications: Gelsemium is contraindicated in persons with poor circulation and weak hearts. According to Mills and Bone, strong analgesic botanicals are not to be used with: concurrent prescription analgesics, in children, depression and psychosis, liver and kidney disease or a history of allergic or anaphylactic shock. Caution is advised in the treatment of neurologic disease. Brinker contraindicates its use during pregnancy and in the presence of gastrointestinal irritation, the later of which clearly does not agree with traditional and current uses.[1007]

Toxicity: Greater individuality in response compared to other low dose herbs. For example, according to King, approximately 1 ml (twelve minims) of the fluid extract had been reported to have been fatally toxic in a 3 year old. Yet, recoveries have taken place from much larger doses. (For report of two fatal cases, see Taylor's Med. Jurisp., 1892, p. 164.)[1008]

Sign of toxicity include: internal strabismus with double vision and ptosis, mydriasis, muscular weakness, giddiness, convulsions, sweating, slowed, initial tachypnea followed by shallow and labored respiration, dizziness, diminished pulse, lowered temperature and blood pressure, drowsiness but easily aroused, intense abdominal cramps, paralysis, death from respiratory and cardiac failure usually takes place in from 1 to 8 hours. [1009]

[1003] Brinker, F, *The Toxicology of Botanical Medicines*, 2nd ed., 1983:56.

[1004] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[1005] Scudder J, *Specific Diagnosis: A Study of Disease*, (Cincinnati: Wilstach, Baldwin & Co.), 1874:61.

[1006] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[1007] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 220, 277

[1008] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[1009] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

Gentiana lutea

Gentianaceae

Common name: Gentian

Habitat: [1010] Indigenous to the mountainous regions of central and southern Europe, cultivated in many other regions.

Botanical description:[1011]

- Flower and Fruit: flowers are yellow, terminal, pedicled and axillary in cyme-like false whorls. The calyx is deeply divided in 2. The corolla is rotate and divided almost to the base into 5-6 lanceolate tips. There are 5 stamens with 8 mm long anthers and 1 superior ovary. The fruit is 6 cm long and capsule shaped. The numerous seeds are flat, oblong, or round, with a membranous edge.
- Leaves, Stem, and Root: Completely glabrous perennial plant that grows to 140 cm high. The rhizome has a number of heads, and the top of the rhizome can attain the thickness of an arm. The main root is a taproot, which grows up to 1 m long. The stem is round, unbranched, hollow, and grooved in the upper region to finger thickness. The leaves are elliptical, bluish-green, with strongly curved ribs, and grow up to 30 cm long and 15 cm wide.

Part used: Radix, the root is harvested in the fall and dried slowly

Energetics: cooling and drying.[1012]

Constituents: [1013]

- Iridoid monoterpene glycosides (bitter principles): amarogentin (determines the value), gentiopricroside, swertiamarine, sweroside
- Sugars: saccharose, gentianose (somewhat bitter), gentiobiose (bitter)
- Xanthone derivatives (colored yellow): including gentisin, gentisein, isogentisin, 1,3,7-trimethoxyxanthone
- Pyridine alkaloids, Volatile oil (traces), Flavonoids, Phenolic acids

Pharmacology:

- The sesquiterpene lactone dimer absinthin is among the most bitter substances known along with the glycosides gentiopicrin and amarogentin found in Gentian. The taste of these can be detected even when diluted 50,000 times. Besides stimulating secretion of saliva in the mouth and hydrochloric acid in the stomach, gentiopicrin may protect the liver. [1014]
- The theorized mode of action of bitters is that of a priming effect on the upper digestive system mediated by a nerve reflex from the bitter taste buds. The result of bitter stimulation is an increase in vagal stimulation resulting a transient rise in gastrin; a slight increase in gall bladder motility and priming of the pancreas. Gastrin, in turn, stimulates in an increase in gastric acid, pepsin and bile secretion. Increased gastric and intestinal mobility, increased secretion of bile and pancreatic enzymes results. Bitters also increase saliva release, but inhibit the release of amylase.[1015]
- According to research, the benefits of bitters occur as follows: [1016]
    - Bitters increase appetite only if a cachectic, malnourished or debilitated state exists in the body.
    - Similarly, bitters increase digestive power mainly when it is below optimum.
    - Experiments with bitters should involve actual feeding, that is, the presence of food in the stomach is important for their activity.
    - At normal doses, the effect of bitters only can be elicited if tasted, as opposed to studies where bitters were applied directly to the stomach in which no effect occurred. However, some in vitro studies support a direct effect with some herbs such as Gentiana.

Medicinal actions: Bitter, gastric stimulant, cholagogue, sialagogue, anti-microbial, antihelminthic.

Traditional Medicinal Use:

- Folk medicine: tonic and in teas to stimulate bile secretion and alleviate loss of appetite, fullness, and flatulence.[1017]
- Eclectics used Gentian for gastrointestinal and inflammatory conditions. Physiomedicalists also applied it topically and in gynecological problems.
    - <u>Gastrointestinal problems:</u>
        - Gentian was recognized an excellent stomachic bitter by the Eclectics and Physiomedicalists. Gentian was observed to actively promote appetite and digestion, slowly increase the circulation and tonify the stomach, intestines, gall and pancreatic ducts. Conditions for which it was applied included *dyspepsia, diarrhoea, worms*, chronic biliousness, constipation and other maladies incident to general feebleness of the tissue.
        - King described Gentiana as a powerful tonic that improves the appetite, strengthens digestion, gives more force to the circulation, and slightly elevates the heat of the body. He discussed the use of Gentian as valuable for relief of irritation and to increase the appetite for use after protracted fevers with depressed vitality and where

recovery depends upon ability to assimilate food.[1018] Scudder specifically recommended it for a sense of depression referred to epigastric region, and associated with sense of physical and mental weariness.[1019] Similarly, Cook described Gentian root as one of the purest bitter tonics with a predominate stimulating quality and distinct relaxant properties. He also noted that Gentian is most appropriate for a lymphatic temperament. Both Cook and King noted the indication of Gentiana in cases of debility and exhaustion, and in all cases where a tonic is required.

- Gynecologic Conditions: Cook described the use of Gentian to give tone to the uterus for some cases of amenorrhea.
- Inflammatory Conditions: The Physiomedicalists observed that Gentian was of much service during the period of remission in malarial fever. King also noted that Gentian derivatives were a valuable substitute for quinine, acting rapidly and efficaciously on the spleen.[1020]
- Topical Applications: Cook noted its use as an external application on degenerate, scrofulous and phagadenic ulcers (an ulcer that spreads peripherally destroying tissue as it increases in size.)

Current Medicinal Use:

- Gastrointestinal Conditions:
  - Using bitters are one of the best ways to treat atonic conditions of the digestive system. Bitters may have a place in the treatment of a number of diseases that have an association with hypochlorhydria or impaired vagal stimulation such as asthma, diabetes and hypoglycemia, anemia and food allergies.
  - Gentian is considered one of the classic bitters. Gentian has its strongest bitter actions by stimulating HCl acid and bile secretion. Gentian is very bitter and astringent so, in the mouth, saliva secretion is increased in an attempt to relieve the mouth dryness. The plant also works by stimulating the taste buds, which in turn prompt an increase in production of saliva and digestive juices. [1021, 1022, 1023, 1024]
  - Gentian is most indicated in conditions of poor, sluggish digestion (bloating, fullness after eating, pain), impaired appetite, anemia (it will increase Fe absorption) and malabsorption.[1025] Gentian is very tonifying to the digestive tract and should be considered for all persons who have weak digestion. Gentiana is considered to have very strong broad-spectrum antimicrobial activity that is utilized in the treatment of bacterial overgrowth of the small intestine.[1026]
  - Gentian is a component of Angnostura bitters. A lemon wedge saturated with Angnostura bitters was found to cure hiccups in 88% of subjects in an open trial.[1027]
  - Bitters may exert a direct effect on the stomach. When isolated stomach cells were exposed to Gentian root, a concentration dependent rise in gastric acid production was observed. Patients took 120 mg of 5:1 dry extract of Gentian root and achieved relief of symptoms of constipation, flatulence, abdominal pain, and nausea.[1028]
  - Gentian is also a valuable inclusion in antihelminthic formulas. Most bitters have some antimicrobial effects via their ability to enhance HCl acid production (kills entering pathogens) and to stimulate bile secretion (antimicrobial). Some bitters, such as Gentian, have additional toxic activity directly to the pathogen.[1029]
  - Bitter herbs are used to improve gall bladder function in cases of cholelithiasis and biliary pain.[1030]
- Inflammatory Conditions:
  - The cooling bitters, including Gentiana, Taraxacum, Cichorium and Erythraea are beneficial for gentle but strong reduction in febrile temperature. These herbs have the advantage of stimulating the otherwise dormant digestive system. Therefore, they help counter fermentation or infection arising from the gut. Gentiana is beneficial in convalescence as well.[1031]

Pharmacy:

- Dosage:
  - Average single dose: 1 g.[1032]
  - Daily dose: 2-4 g.[1033]
  - Not given in high doses: just enough to promote a strong taste of bitterness.[1034]
- Infusion:
  - ½ tsp (1-2 g)/ boiling water, steep x 5-10 min. Sig.: 1cup of cold or lukewarm tea several times/day, incl. ½ hr ac.[1035]
  - 1-2 g/150 ml boiling water, BID-TID, 1hr ac.[1036]
- Decoction:
  - 1g/1cup.[1037]
  - ¼ tsp/cup.[1038]
  - ½ tsp shredded root/cup, boil 5 min. Sig. Drink warm 15-30 min ac or when acute stomach pains result from a feeling of fullness.[1039]
  - 1-2 g/150 ml cold water x 8-10 hrs, then boil.[1040]
- Tincture:
  - Unspecified strength: 1-4 ml TID,[1041] 20-40 gtts/1/2 glass water ac.[1042]

- 1:5 45% alcohol, sig. 1-3 ml in 1/2 cup water ac; max. weekly dose:40 ml.[1043]

- Liquid extract:
  - 2-4 g.[1044]
  - 1:4 dry liquid extract: 1-30 gtts in little water QD-QID ac.[1045]
  - 1:1 fluid extract: 1-2 ml, BID-TID, 1hr ac.[1046]
- Standardized extract:
  - 0.5-2 g /day in form of pills. [1047]
  - Native dry extract 3.5-4.5:1 (w/w): 0.2-0.4 g BID-TID, 1 hr ac. [1048]

Drug/Nutrient Interactions:

Contraindications:

- Duodenal ulceration.[1049]
- "Cold-dry" conditions (e.g., shivering with dry cough, some kidney dz's).[1050]
- Gastric and duodenal peptic ulcers.[1051]

Toxicity/Side Effects:

- King noted that when taken in large doses Gentian will oppress the stomach, irritate the bowels, produce nausea and vomiting, increase fullness of pulse and cause headache.[1052]
- Over excitation of the stomach and a feeling of oppression occur with increased force of circulation and bowel irritation.[1053]
- Large doses for long periods of time can harm digestion and induce frontal headaches.[1054]

[1010] *PDR for Herbal Medicines*, 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p. 837

[1011] Ibid, pp. 836-7

[1012] Sharol Tilgner, *Herbal Medicine From the Heart of the Earth*, Wise Acres Press, Inc., Creswell, OR, 1999, p. 65.

[1013] *PDR*, p. 837

[1014] Lininger et al, *Healthnotes*: *Clinical Essentials*, *Herb Monographs*, Prima Publishing, Rocklin, CA, 2001.

[1015] Simon Mills, Kerry Bone, *Principles and Practice of Phytotherapy: Modern Herbal Medicine*, Churchill Livingstone, Edinburgh, 2000, p. 39

[1016] Reference not located

[1017] *PDR*, p. 837.

[1018] Harvey Wickes Felter and John Uri Lloyd, *King's American Dispensatory,* 18th ed., 3rd revision, Eclectic Medical Publications, Portland, 1983.

[1019] John M. Scudder, *Specific Medication and Specific Medicines*, 15th ed, Eclectic Medical Publications, Sandy, OR, 1903.

[1020] Felter

[1021] Mark Blumenthal, *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, American Botanical Council, 1998.

[1022] Mills, p. 39

[1023] *PDR.*

[1024] Lininger .

[1025] Mills, p. 138,

[1026] Joseph E. Pizzorno Jr., Michael T. Murray (eds.), *Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, Edinburgh, 1999, p. 100

[1027] Mills, p. 39

[1028] Ibid, pp. 39-40

[1029] Reference not located.

[1030] Mills, p. 138,

[1031] Ibid

[1032] *PDR*, p. 837.

[1033] Ibid.

[1034] Mills, p. 173

[1035] *PDR*, p. 837.

[1036] Mark Blumenthal et al (eds), *Herbal Medicine: Expanded Commission E Monographs*, Integrative Medicine Communications, Newton, MA, 2000, p.151.

[1037] *PDR*, p. 837.

[1038] Tilgner, p. 65.

[1039] David Hoffman, *The New Holistic Herbal: A Herbal Celebrating the Wholeness of Life*, 3rd ed., Element, Shaftesbury, Dorset, 1990, p.202.

[1040] Blumenthal et al (eds), *Herbal Medicine: Expanded Commission E Monographs*, p.151.

[1041] *PDR*, p. 837.

[1042] Rudolf Fritz Weiss, *Weiss's Herbal Medicine,* classic ed., Thieme, Stuttgart, 2001, p. 42.

[1043] Dr. Alshuler

[1044] *PDR*, p. 837.
[1045] Tilgner,, p. 65.
[1046] Blumenthal et al (eds), *Herbal Medicine: Expanded Commission E Monographs*, p.151.
[1047] Weiss, p. 42.
[1048] Blumenthal et al (eds), *Herbal Medicine: Expanded Commission E Monographs*, p.151.
[1049] Mills, p. 173
[1050] Ibid.
[1051] Blumenthal et al (eds), p.150.
[1052] Felter.
[1053] WM., H., Cook, *Physiomedical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*, Eclectic Medical Publications, Portland, 1985, p. 442
[1054] Tilgner, p. 65.

Germanium maculata

Geraniaceae

Common name: American cranesbill

Habitat: United States preferring rich, moist soils in the woods.

Botanical description: Singular and leafless. The flowers, which bloom from July to October, are greenish-brown in color on a long spike. The root is 3-5 cm long, 0.5-1 cm thick, dull brown, hard, knotty with small rootlets.

Parts used: Root, herba

Constituents: Tannins (up to 30%) inc. gallic acid; Resinous compounds

Pharmacology: The actions of Geranium relate to its tannins. Tannins are poorly absorbed, therefore the action of Geranium is primarily on the tissue with which it comes into contact. Thus the direct effects of ingested tannins are localized to the gastrointestinal tract.

Tannins precipitate proteins, including exposed proteins on cell surfaces. This results in a protective coating over the cell membrane as well as mechanical shrinkage of the cell reducing passive diffusion out of the cell. Its ability to pull tissues together lend it secretolytic activity and antiinflammatory actions.

Medicinal actions: Styptic, astringent, vulnerary, tonic

Medicinal uses: Geranium is a supreme astringent. The specific indications for Geranium are: "Relaxed mucous tissues with profuse debilitating discharges; chronic mucous diarrheas; chronic dysentery; diarrhea with constant desire to defecate; passive hemorrhages; gastric ulcer". [Felter] Overall, Geranium is most indicated in passive hemorrhage or chronic or sub-acute states of inflammation with flaccid tissues.

- Gastrointestinal Conditions: Geranium is also hemostatic. Therefore in cases of intestinal bleeding, even more so if concurrent with diarrhea, Geranium is an excellent therapy. Hemorrhoids, especially friable hemorrhoids respond well to Geranium, either taken orally or as a suppository.
- Topical Applications: If it is applied topically, Geranium will help to allay bleeding from ulcers and lacerations while shortening the healing time. Geranium can be gargled for mouth ulcers and other inflammatory pharyngitis.
- Gynecologic Conditions: Geranium is also useful in a douche for vaginitis in order to reduce exudate and bleeding if present. Geranium combines well with Trillium and Achillea for hemorrhage and excessive menstrual bleeding.

According to Mills and Bone:[1055]

- Gastrointestinal Conditions: Indications for tannins include inflammation of the upper digestive tract and diarreha following gastrointestinal inflammation. Tannin containing herbs will gently control diarrhea without risk of aggravating infection by reducing intestinal motility. They also reduce mocosal damage. Strongly astringent herbs such as Geranium will aggravate a gastric ulcer but may be suitable for duodenal ulcer treatment.
- Topical Applications: Tannins are also indicated for open, discharging lesions, wounds, hemorrhoids and third degree burns

According to the Textbook of Natural Medicine:[1056]

- Gynecologic Conditions: Geranium is among a group of botanicals used as hemostatics in the treatment of menorrhagia. The use of these botanicals should be reserved for intractable cases, cases where immediate cessation of blood flow is required and/or as a short-term adjunct to other therapies.

Pharmacy: Tannins should be taken after food in most cases. For some lesions of the upper digestive tract, short-term use between meals or before food is justifiable. Long-term therapy with high doses of tannins is not advisable.[1057]

Infusion:

It may be employed in infusion with good results, especially when a topical action on the stomach and bowels is wanted, or in chronic cases when we desire the action of Gallic Acid. (Scudder)

Decoction:

1-2 tsp./cup; simmer 10-15 min.; sig 1 cup TID (Alschuler)

Tincture:

1:5 25% EtOH 2-4 ml TID; weekly maximum is 60 ml (Alschuler)

Robert's formula [Althea: Geranium: Hydrastis: Echinacea: Phytolacca: Ulmus: Baptisia: Cabbage powder] is used successfully for ulcerative colitis flare-ups and other forms of inflammatory bowel disease. Dr. Bastyr used a modified version of this formula that also includes Symphytum, pancreatin, niacinamide and duodenal substance:[1058]

8 parts each: Althea, Echinacea, Geranium, Hydrastis, Phytolacca, Ulmus, cabbage powder

4 parts: Baptisia tinctoria 2 parts each: pancreatin, duodenal substance 1 part: niacinamide

Contraindications: The use of tannins is contraindicated or inappropriate in cases of constipation, iron deficiency and malnutrition.[1059] Adapted from Brinker: [1060]

When extracted in hot water, tannins can precipitate alkaloids from plants, alkaloidal drugs, proteins, salicylates, iodine and iodides and metals thereby slowing, reducing or blocking their absorption. The drug-tannin reaction can interfere with dosing if sources of the two compounds are combined in solution prior to administration.

Drug-tannin precipitates are maintained in an alkaline pH and dissovle in an acid environmnet such as the stomach. Unless the solution is shaken well, precipitates will settle in the bottom leading to low or no amounts in intial doses and high or toixc amounts when the last doses from the bottle are taken. The precipitates are generally soluble in mixtures containing over 15-40% alcohol. Tannins will not precipitate low concentrations of alkaloidal salts in the presence of many of the gums.

Toxicity: Safe herb, however use with caution in people with spastic, dry constipation or people taking anicholinergic medication as it will potentiate smooth muscle irritability.

[1055] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 170-1, 176

[1056] Murray M, Pizzorno J. Textbook of Natural Medicine, 2nd ed.. Churchill Livingstone 1999 p.1399

[1057] Mills and Bone p. 171

[1058] Murray and Pizzorno, p. 1345

[1059] Mills and Bone, p 170

[1060] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 157-8

Gingko biloba

Gingkoaceae

Common name: Maidenhair tree

Habitat:

Botanical description:

Part used: leaf

Historical use:

Energetics:

Constituents: [1061, 1062]

The medical benefits of *Ginkgo biloba* extract are attributed primarily to two groups of active components: the Ginkgo flavone glycosides and the terpene lactones. GBE (Ginkgo biloba extract) refers to the standardized extract.

- Ginkgo flavone glycosides typically make up 24% of the standardized extract where as the raw herb is comprised of 0.5-1% flavone glycosides. The glycosides include quercetin, kaempferol, isorhamnetin (including coumaric acid esters of flavonoids). These components are primarily responsible for GBE's antioxidant activity and may mildly inhibit platelet aggregation.
- Terpene lactones: Ginkgolides and bilobalide A, B, C, J, typically make up 6% of the standardized extract. They are associated with increased circulation to the brain and other parts of the body, and they exert a protective action on nerve cells. GBE regulates the tone and elasticity of blood vessels, making circulation more efficient.
- Flavonoids: including monosides, biosides and triosides of quercetin
    - Bioflavonoids: for example amentoflavone, bilobetin, 5-methoxybilobetin, ginkgetin, isoginkgetin
    - Proanthocyanidins, ginkolic acids; sterols, procyanidins; polysaccharides
- Trilactonic diterpenes: Ginkgolide A, B, C
- Trilactonic sesquiterpene: bilabolide

Pharmacology:

GBE has antioxidant actions in the brain, retina of the eye, and the cardiovascular system.[1063] Ginkgo has a number of pharmacological effects including: inhibition of cerebral edema and acceleration of its regression; memory enhancement, reduction of retinal edema and of cellular lesions in the retina; inhibition in age-related reduction of neurotransmitters as well as stimulation of choline uptake in the hippocampus. [1064, 1065]

In animal experiments, improvement of hypoxic tolerance, improved glucose utilization, membrane stabilization, and a reduction of blood viscosity have been noted. [1066]

Tissue Effects: Ginkgolides demonstrate prevention of membrane damage caused by free radicals as in cerebral ischemia. Other effects of GBE include membrane antioxidant, increases O_2 and glucose utilization, increases membrane polarization, increases blood flow, tissue oxygenation and tissue nutrition.

White blood cell and Platelet Effects: Gingko decreases adhesion/degranulation of mast cells, increases PG I_2 and inhibition of platelet activating factor. This effect has been observed in the use of Ginkgolides to prevent antigen-induced bronchoconstriction and induction of airway hyperreactivity by PAF. A thrombolytic effect on PAF-induced thrombus has also been demonstrated as well as reduction in the infarct size in experimental myocardial occlusion. Ginkgolides inhibit the effect of PAF on eosinophils. Gingko has improved peak flow rates in asthmatic children and caused significant clinical improvements in adults.

Nerve Cells: decreased embolization in hippcampus and striatum, increased transmission rate, improves synthesis/turnover of neurotransmitters, normalizes ACh receptors in hippocampus , enhances memory and cognitive function, especially in the elderly; reduced cerebral edema, normalized brain glucose and ATP following ischemia

Vascular Effects: increased perfusion rate to many areas, increased release of endothelium derived relaxing factor leading to vasodilation (through the NO pathway) and increased venous tone. Arrhythmia has been shown to be prevented by administration of Ginkgolides. IV administration of Gingko extract was more effective than 28 conventional medications in improving cerebral blood flow in stroke victims.

Other Effects:

- inhibited rate of MAO activity
- inhibited Pneumocytstis carinii in vitro and reduced the number of organisms in the rat
- relaxes male human and rabbit copus cavernosal tissue
- reduced disturbances of lipid metabolism and the severity of plaque formation in rabbits fed a high fat diet compared to placebo and rutin. Gingko can affect metabolic processes in the liver and may modify lipid deposition in major arteries.

- Intragastric administration with Zingiber officinalis demonstrated anxiolytic effects comparable to diazepam.
- Promoted hair regrowth in shaved mice.
- Inhibited the development of stress-induced polydipsia in rat: Gingko inhibited corticosterone hypersecretion and CRH secretion.
- Ginkgo has demonstrated anti-inflammatory activity comparable to indomethacin with topical application

Pharmacokinetics: Flavonoid glycosides and aglycones appear to be cleared by 24 hours of ingestion whereas flavonoid metabolites take longer to be cleared. Ginkgolides are highly bioavailable

Medical actions: anti-PAF, antioxidant, tissue perfusion enhancer, circulatory stimulant, nootropic, anti-inflammatory, anti-platelet aggregation, anti-thrombotic

Traditional Medicinal Uses: No information is available in Cook's or King's dispensatory. Gingko has been used as a botanical in Ayurvedic medicine. Chinese medicine incorporates Ginkgo nuts which have signficantly different properites from the leaves.

Current Medical Uses:

- Behavioral and Psychological Conditions: Ginkgo biloba is supportive in the alleviation of depression elderly people not responding to antidepressant drugs. [1067, 1068, 1069]
- Cardiovascular Conditions:
  - Intermittent claudication: Extensive studies have been done with Ginkgo extracts (GBE) for treatment of intermittent claudication. Two double blind, placebo-controlled studies that included a total of 139 people with intermittent claudication found that 120 mg of GBE per day increased pain-free and total walking distance.[1070, 1071]
  - Atherosclerosis (extrapolation): Ginkgo may reduce the risk of atherosclerosis by interfering with platelet activating factor (PAF). Ginkgo also increases blood circulation to the brain, extremities.[1072]
  - Sexual dysfunction (vascular etiology): Ginkgo, by increasing arterial blood flow, may help some impotent men. A small, open study on 30 men has shown that Ginkgo can reduce sexual problems caused by antidepressants like fluoxetine, bupropion, venlafaxine, and nefazodone in men and women.[1073] Approximately 200 mg per day of Ginkgo had a positive effect on sexual function in 76% of the men.
- Neurological Conditions:
  - Age-related cognitive decline (ARCD): Ginkgo has also been shown effective for healthy aging people with ARCD. In one study, 320 mg or 600 mg of standardized Ginkgo biloba extract (containing 24% flavonoid glycosides and 6% terpenes) was taken once, one hour before cognitive testing. At both levels of supplementation, Ginkgo significantly improved the speed of information processing. In another study, 31 elderly people with mild to moderate memory impairment were given 40 mg of a similar standardized Ginkgo biloba extract TID. Significant improvements in cognitive function were observed after 12 and 24 weeks of supplementation. [1074]

    An extract made from the leaves of the Ginkgo biloba tree is a leading treatment for early-stage Alzheimer's disease in Europe. Ginkgo biloba extract (GBE) may improve memory and quality of life and slow progression in the early stages of the disease. In addition, four double-blind studies have shown that GBE is helpful for people in early stages of Alzheimer's disease, as well as another form of dementia known as multi-infarct dementia.

    Patients with other types of dementia, including problems due to poor blood flow to the brain, also respond to GBE. Research studies have used 120 to 240 mg of GBE, standardized to contain 6% terpene lactones and 24% flavone glycosides per day, generally divided into two or three portions. GBE may need to be taken for six to eight weeks before desired actions are noticed. [1075, 1076, 1077]
  - Tinnitis: Two studies have found an extract of Ginkgo standardized to contain 24% flavone glycosides and 6% terpene lactones in the amount of 120 mg per day useful for tinnitus sufferers, although other studies have failed to find Ginkgo beneficial. [1078, 1079]
- Ophthalmological Conditions: Ginkgo may help treat early-stage macular degeneration, according to double-blind research. Doses commonly used are 120–240 mg of standardized extract (24% Ginkgo flavone glycosides and 6% terpene lactones) per day. [1080, 1081]
- Pulmonary Conditions: Ginkgo blocks the action of platelet-activating factor (PAF), a compound that in part causes asthma symptoms. A controlled study used a highly concentrated tincture of Ginkgo leaf and found this helped decrease asthma symptoms. For asthma, 120–240 mg of standardized extract or 3–4 ml of regular tincture TID can be used. [1082, 1083]

Pharmacy:

50:1 standardized extract, 120 mg (equivalent to 27-30 mg Gingko flavone glycosides and 10 mg terpenoids per day or 4-8 g leaf/day depending on quality). Generally 40 mg tablets and 40 mg/ml liquids are available. Some studies have used twice this dose. Most studies have used a standardized extract containing 24% flavone glycosides and 6% terpenoids which eliminates many of the known constituents including bioflavonoids, ginkolic acids and sterols. Gingko should be given to patients for at least 6 weeks before being reassessed.

Combination products include: Tanakan, Rkan, Ginkgobil, Kaveri, Tebonin.

1:5 Tincture

Tea (very bitter) 4-8 g = 120 mg of the standardized extract

Drug Interactions: Ginkgo has also been combined with standard antidepressant medications.

Contraindications: Caution when using Ginkgo with patients on anticoagulant or antiplatelet medication such as warfarin and aspirin. Three case reports of spontaneous bleeding with Ginkgo use have been reported (both standardized and non-standardized preparations). Cases of excessive bleeding may also be contraindicated. Ginkgo may be contraindicated in anovulatory amenorrhea.

Other drug interactions include possible potentiation of MAO inhibitors and potentiation of papaverine.[1084]

Toxicity: Gingko standardized extract use has very low risk. Use of the raw herb, however, can cause complaints. The seeds, stems and leaves contain 4'-O-methylpyroxidine which can cause vitamin B_6 deficiency symptoms including convulsions. The stems have been measured to contain 42 μg per gram fresh weight. The oral toxic dose in guinea pigs was 11 mg/kg. Bilobalide appears to decrease the toxic affect.

Side effects from the consumption of the leaf are very few: GI discomfort, **HA**, dizziness; from the fruit/nut: erythema, edema, vesicles, severe GI irritation.

[1061] Mills, Simon and Bone, Kerry. Prinicples and Practice of Phytotherapy: Modern Herbal Medicine. Churchill-Livingstone 1999 p 405

[1062] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[1063] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 405

[1064] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 404-407.

[1065] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[1066] Ibid

[1067] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 404.

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[1070] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[1071] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000. p. 404

[1072] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 404

[1073] Cohen AJ, Bartlik B. *Ginkgo biloba* for antidepressant-induced sexual dysfunction. *J Sex Marital Therapy* 1998;24:139–45.

[1074] Ibid

[1075] Ibid

[1076] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 404.

[1077] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999, p. 755.

[1078] Bone, K. Clinical Applications of Ayurvedic and Chinese Herbs, 3rd Ed. Phytotherapy Press, Warwick, AUS. 2000, p. 404.

[1079] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999, p. 756.

[1080] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999, p. 756

[1081] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 404.

[1082] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999

[1083] Bone, K. Clinical Applications of Ayurvedic and Chinese Herbs, 3rd Ed. Phytotherapy Press, Warwick, AUS. 2000

[1084] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 77-8

Glycyrrhiza glabra — Leguminosae (Pea Family)

Common name: Licorice, Sweet Root, Yahsi Madhu or honey-stick (Sandskrit), Gan cao (Chinese).
[Other species w/in this genera: G. uralensis & G. inflate; which differ from G. glabra in the amounts of phenols each contain.][1085]

Habitat: Individual varieties are found in different regions. G. glanulifera is found in SE Europe & W Asia. G. pallida & G. violocea are found in Iraq. G. tyica is indigenous to S Europe & SW Asia.

Botanical description: Licorice is an herbaceous perennial that stands 1 to 2 m high on a long sturdy primary taproot. The taproot is 15 cm long & subdivides into 3-5 secondary rootlets, 1.25 m in length; & several horizontal woody stolons, which may reach 8 m. in length. Sturdy new stems are produced every year; which are erect & branched either from the base or from further up, & are generally rough at the top. Leaves are alternate, pinnate & 10 to 20 cm long. The leaflets are in pairs of 3-8. The stipules are very small & drooping.

Part used: Root.

Energetics: Sweet, Bitter. Cooling. (-)Vata & Pitta. (+) Kapha w/ long term use. Works on all tissues, w/ a particular affinity for the GI, respiratory, CNS, reproductive, & excretory systems.[1086]

Constituents: [1087]

- Triterpene saponins (3-15%): including the sweet tasting Glycyrrhizin (GL), which breaks down into an aglycone called 18-beta-glycyrrhetic acid (GA). Glycyrrhizin is present in the form of potassium & calcium salts.
- Flavonoids (1-1.5%): give a yellow color to the root, include: liquiritin, chalcones & isoflavonoids.
- Isoflavonoids: (aglycones) formononetin, glabrene, glabridin, glabrol, 3-hydroxyglabrol, glycyrrhisoflavone.
- Cumestan derivatives: glycyrol, isoglycyrol, liqcoumarin.
- Hydroxycoumarins: including herniarin, umbelliferone, glycycoumarin, licopyranocumarin.
- Sterols: including, beta-sitosterol, stigmasterol.
- Volatile oil (0.05%): anethole, estragole, eugenol, hexanoic acid.

[Other species w/in this genera: G. uralensis & G. inflate; which differ from G. glabra in the amounts of phenols each contain.][1088]

Pharmacology:

Glycyrrhizin has an intense sweet taste, which is b/w 50-170x sweeter than sugar. Glycyrrhizinic acid lacks this sweet taste.[1089]

The two most important constituents of licorice are glycyrrhizin (GL) & the flavonoids. W/ oral ingestion, GL is broken down to glycyrrhetinic acid (GA). Glycyrrhizin is anti-inflammatory & inhibits the breakdown of cortisol through inhibition of 5-β-reductase & 11-β-hydroxysteroid dehydrogenase.[1090] Flavonoids in licorice help enterocytes to heal, as well as acting as potent antioxidants which work to protect hepatocytes. In test tubes, the flavonoids have been shown to kill *Helicobacter pylori*, hence its use in treatment of stomach ulcers & stomach inflammation.[1091]

Licorice also has antiviral properties. Glycyrrhetic acid (GA) inhibits viral growth & can inactivate viral particles in some cases. GA is considered esp. effective against: herpes simplex virus, varicella-zoster virus, human herpes virus, and HIV. Glycyrrhizin (GL) has not been proven as an effective antiviral, since oral doses of GL are converted into GA w/in the gut & hence GL can not have systemic effects. However, both GA & GL are effective topical antivirals, esp. for herpes & shingles.[1092]

Medicinal actions: Anti-inflammatory, Mucoprotective, an Adrenal Tonic, Expectorant, Demulcent, mild Laxative, Anti-carcinogenic.

Current & Traditional Medicinal Uses:

Licorice root was observed to be emollient, demulcent, & nutritive; acting upon mucous membranes to decrease irritation. It was considered useful in coughs, catarrhs, irritation of the urinary organs & pain of the intestines d/t diarrhea.
Specifically, it can be used for gastritis, gastric ulcers, ulcer prophylaxis and some types of viral liver inflammation.[1093]

- **Historical use:** Licorice Extract has been used throughout the ages by many cultures. It was known in the times of Dioscorides & appears to have been in common use in Germany during the Middle Ages. A common rx for bad colds was to make a strongly flavored beer w/ elecampane, Licorice, aniseed, sassafras & fennel.[1094] A writer in the first half of the sixteenth century notes that Licorice is abundant in many parts of Italy & describes preparation by making a succus or extract by crushing & boiling the fresh root.
- **Ayurvedic Medicine**: Used for treating: coughs, colds, bronchitis, sore throat, laryngitist, ulcers, hyperacidity, painful urination, abdominal pain, general debility. Licorice is an effective expectorant, as it helps to liquefy mucus. In large doses, it is a good emetic to cleans the lungs and stomach in persons of constitutional Kapha. Licorice acts as a mild laxative, to soothe & tone mucus membranes, relieve muscle spasms & decrease inflammation. It is often added to formulas to mask the flavor of more distasteful herbs, helping to harmonize their qualities, countering heat & dryness & reducing toxicity. For colds & ailments of the respiratory tract, it combines well with fresh ginger. As a tonic for the teeth, it is added w/ ginger & cardamom. As a food, Licorice is tonic & rejuvenating. It tends to be sattvic in quality, calming the mind & nurturing to the spirit. Licorice nourishes the brain & increases cranial & cerebrospinal fluid, promoting contentment & harmony throughout the body. In general, it improves: the voice, vision, hair, complexion & instills overall strength to the body.[1095]
- **Pulmonary Conditions:** It is employed principally for irritation of the respiratory mucosa & as a supportive herb in expectorating formulas.
- **Endocrine Conditions:** Glycyrrhiza is commonly used in naturopathic medicine to treat "adrenal fatigue." However, this is a term encompassing a nebulous variety of symptom presentations that may or may not be due to adrenal hypofunction (Maladaptive Stress Syndrome Stage 3). In fact, adrenal fatigue may present with adrenal cortex hyperfunction (MSS Stage 1 or 2). Therefore, appropriate assessment of adrenal cortex function should be done prior to administration of Glycyrrhiza for "adrenal fatigue."
- **Genitourinary Conditions**: Glycyrrhiza prevents bacterial adherence to the bladder wall.
- **Gynecologic Conditions**: Mills & Bone include Glycyrrhiza in the treatment of polycystic ovarian syndrome[1096]
- **Inflammatory Conditions:** Glycyrrhiza has be found to extend the effects of corticosteroids. It has been utilized in the treatment of rheumatoid arthritis.
- **Metabolic Conditions**: Glycyrrhiza may be used to treat hyperkalemia, due to the aldosterone-like effect of glycyrrhizin.
- **Gastrointestinal Conditions**: Anti-ulcer activity[1097]
- **Psychological/Behavioral Conditions:** Mills & Bone include Glycyrrhiza in the treatment of depression. However, it is important to note that patients with chronic depression often have elevated cortisol levels.
- **Topical Applications:** Topically as an anti-viral & anti-inflammatory agent

Current Research Review

- **Cardiology:**
  - **Hypercholesterolemia:**[1098]
    - Design: Placebo-controlled clinical trial
    - Patients: Moderately hypercholesterolemic patients
    - Therapy: Licorice root extract in the dose of 0.1 g qd x 1 month
    - Results: was found to decrease patients' plasma susceptibility to oxidation, increase resistance of plasma LDL against three major atherogenic modifications (oxidation, aggregation, and retention), reduce plasma cholesterol levels, and reduce plasma triglyceride levels. Systolic blood pressure was also reduced by 10%. Patients then received placebo x 1mo, after which all the parameters returned to the baseline, except the blood pressure
- **Infectious diseases:**
  - **Hepatitis C:**
    - Study 1:[1099]
    - Design: Placebo-controlled clinical trial
    - Patients: European patients with chronic hepatitis C (non-responders to interferon therapy or genotype I/cirrhosis)
    - Therapy: IV glycyrrhizin 3-6 times/week x 4 weeks.

        - Results: These patients had a significant drop in ALT, compared to the placebo group, with 6x/week treatments being more effective than 3x/wk treatments. The ALT lowering effect disappeared after cessation of treatment. No major side effects were noticed
        - Study 2:[1100]
        - Design: Placebo-controlled clinical trial.
        - Patients: Fifty-seven patients with chronic hepatitis C (non-responders to interferon therapy or genotype I/cirrhosis)
        - Therapy: Glycyrrhizin 240, 160 or 80 mg or placebo (0 mg glycyrrhizin) IV 3x/week x 4 weeks.
        - Results: Glycyrrhizin lowered serum ALT during treatment, but had no effect on HCV-RNA levels. The effect on ALT disappeared after cessation of therapy.
    - **HIV/AIDS:**[1101]
        - Design: Uncontrolled clinical trial
        - Patients: One hundred and twelve HIV patients (72 with AIDS)
        - Therapy: oral doses of 120 mg of Glyke for 3-6 month
        - Results: Thirty percent of patients improved immunologically as measured by T4:T8 ratio and T4 counts. Three patients showed seronegative conversion after treatment but tests confirmed the virus was still present
- **Dentistry:**
    - **Dental Plaque:**[1102]
        - Design: Clinical trial
        - Patients: Twenty one subjects
        - Therapy: Mouth rinse with glycyrrhizin
        - Results: Less dental plaque after 3 days.
    - **Aphthous ulcers:**[1103]
        - Design: Clinical trial
        - Patients: Twenty patients with aphthous ulcers
        - Therapy: Deglycyrrhizinated licorice (DGL) mouth wash
        - Results: Fifteen patients experienced 50-75% improvement within one day followed by complete healing of the ulcers by third day.
- **Dermatology:**
    - **Eczema:**[1104]
        - Design: Controlled clinical trial
        - Patients: Patients with eczema
        - Therapy: Ointment with pure glycyrrhetinic acid topically
        - Results: Improvement was as effective as with hydrocordisone.

Pharmacy:

- Licorice is commonly administered in decoction, sometimes alone or with the addition of other agents. It is preferred when used in combination.[1105]
- The average daily dose is 5 to 15 gm of the root, equivalent to 200 to 600 mg of glycyrrhizin, 1 teaspoonful = 3 gm herb[1106]
- Liquid extract (1:1) 2-6 ml QD
- Deglycyrrhizinzed licorice extract BP: 1.2-4.6 g QD

Drug Interactions:[1107]

Due to the effect on Na^+/K^+ balance:

- cardiac glycoside poteniation
- stimulant laxatives & thiazide diuretics, spironolactone (contraindicated), amiloride(contraindicated)
- insulin therapy

Due to the inhibition of cortisol catabolism:

- hydrocortisone therapy poteniation

Contraindications/Toxicity/Side Effects:

- C/I: chronic hepatitis, cholestatic diseases of the liver, cirrhosis of the liver, severe renal insufficiency, hypertonia, hypokalemia, and PG.[1108]
- Also C/I in:[1109]
    - Severe renal insufficiency or HTN as overuse may increase blood pressure through sodium &, subsequently, fluid retention through that action of glycyrrhizin.
    - Low serum potassium or cardiac disease as overuse can decrease serum potassium as well as induction of mineral corticoid effect through the prevention of hydrocortisone breakdown (in vitro).
    - Pregnancy due to the emmenagogue effect (empirical), interference with steroid metabolism & phytoestrogen components.
    - Liver cirrhosis or bile stasis disorders due to its choleretic effect & chronic hepatitis although it has been used to treat chronic infective hepatitis.
    - Recovering alcoholics due to seemingly greater sensitivity to the adverse effects, particularly myopathy secondary to potassium loss.
    - Type 1 diabetics since they appear to be predisposed to hypokalemia & sodium retention.
    - The same argument can be used for overweight individuals due to the increased risk for HTN, diabetes & cardiovascular problems.
- No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages. Potassium loss occurs due to other drugs, e.g., thiazide diuretics; with potassium loss, sensitivity to digitalis glycosides increases. The intake of higher dosages (above 50 gm per day) over an extended period of time will lead to hypernatremia, edema, hypertension & cardiac complaints. In rare cases, myoglobinemia, due to the aldosterone-like effect of the saponins has been seen. Preparations from the drug should for that reason not be administered for longer than 6 weeks. The complaints disappear after discontinuing the drug.[1110]
- Systolic blood pressure increased by 3.1-14.4 mm Hg in healthy Caucasian volunteers, who took licorice in the doses of 50-200g/day x 2-4 weeks, corresponding to the daily intake of 75-540 mg glycyrrhetinic acid. This study demonstrated linear dose-response, but not time-response relationship.[1111]
- Heavy glycyrrhizin exposure (greater or equal to 500 mg/week) by 110 pregnant women, did not significantly affect birth weight or maternal blood pressure, but it was significantly associated with lower gestational age.[1112]

Grindelia caporum/ G. robusta Compositae / Asteraceae (Sunflower / Aster Family)

Common name: Gumweed.
[Note: G. squarrosa is a similar herb w/ the same constituents, but is thought to have different medicinal actions. Be sure to check spp. before use.]
Habitat: Native to Unites States & to S. America.
Botanical description: Early growth is covered with a glutinous varnish. This is a perennial or biennial small shrub with stems up to 1.5 feet long, round, yellow, & smooth. Leaves are alternate, light-green, coarsely-toothed. Solitary terminal flower-heads are large & yellow.

Parts used: Herba

Energetics: Pungent. Heating. (-) Kapha & Vatta. (+) Pitta.

Constituents

- Diterpene Alkaloids: Grindeline
- Flavonoids: Acacetin, Kumatakenin, Quercetin
- Resin (20%)
- Volatile oil (0.2%)
- Saponins: Grindelin
- Selenium.
- Tannins.

Pharmacology: No information is currently available from the selected resources.

Medicinal actions: Anti-spasmodic. Expectorant. Anti-asthmatic. Diaphoretic.

Current & Traditional Medicinal Uses:

Grindelia is Indicated in cases of: asthmatic breathing, w/ soreness & a raw feeling in the chest; a dry, harsh cough; labored breathing, w/ a dusky coloration of the face, as in plethoric individuals. Also, gumweed can be used locally in the treatment of old atonic ulcers, as well as in cases of Rhus tox poisoning.[1113]

- **Genitourinary Conditions:** On account of the irritant effects upon the kidneys, Grindelia acts as a diuretic, & can be useful in cases of renal insufficiency.\
- **Pulmonary Conditions:** G. robusta was used traditionally in the treatment of: asthma, bronchial affections, & pertussis.[1114] Grindelia is a relaxing expectorant, &t is most useful in spasmodic coughs characterized by production of thick sputum, or in dry, irritated, non-productive coughs. Grindelia relaxes smooth muscles of the bronchi & relaxes heart muscles. Thus, if bronchial & asthmatic conditions are associated with palpitations & nervousness, Grindelia is an excellent remedy. Grindelia may be used chronically or acutely, although it is better suited for short-term use. Grindelia combines well w/ Lobelia in the treatment of asthma.
- **Topical Applications:** Grindelia is used externally for contact dermatitis, chronic ulcers, or any chronic skin condition characterized by a deficiency of circulation. Topical application causes drying, relieves inflammation, & stimulates circulation to the area. A lotion or fluid extract of Grindelia is a soothing, healing application to poison oak & poison ivy. It has been traditionally useful in the treatment of old, chronic, indolent ulcers.[1115]

Current Research Review:

- Search of Medline yielded no human studies as of September 2002.

Pharmacy:[1116]

- 4-6 g herb qd
- 3-6 g liquid extract qd
- Tincture: 1.5-3 ml qd

Contraindications/Toxicity/Side effects: Side effects include gastric irritation and diarrhea. Large doses are said to have poisonous effect.[1117]

[1113] Felter HW, Loyd JU. *Kings American Dispensatory*, 18th ed. Eclectic Mecial Publications, Sandy, OR, 1983.
[1114] Felter.

[1115] Scudder J. *Specific Medication & Specific Medicines*.

[1116] *PDR for Herbal Medicines.* Medical Economics Company, Montvale, New Jersey, 1998:883

[1117] *PDR for Herbal Medicine,* 883

Gymnema sylvestre

Asclepiadaceae

[This monograph is adapted from: Bone K *Clinical Applications of Ayurvedic and Chinese Herbs* (Warwick, Australia: Phytotherapy Press) 1996:115-17.]

Common names: Small Indian Ipecac, Gurmar in Hindi "sugar destroyer"

Habitat: Central and Southern India and tropical Australia

Botanical description: A large woody climbing plant.

Parts used: Leaves

Constituents: Gymnemic acids (saponin mixture), Gurmarin (polypeptide)

Medicinal actions: Hypoglycemic, antidiabetic, hypocholesterolemic

Pharmacology:

Gymnema leaves are thought to increase insulin secretion.[1118] Gymnema reduces blood sugar in hyperglycemic rats, while having no effect on rats with normal levels of glucose.[1119] Gymnema regulates blood sugar levels in diabetic rabbits and increases enzymes which facilitate the insulin-independent utilization of glucose. For instance, glucose metabolism into protein and glycogen in the liver, kidney and muscle is increased with Gymnema.[1120] Gymnema extract depresses portal release of gastric inhibitory peptide (GIP) after glucose infusion. GIP normally stimulates insulin secretion from the pancreas. [1121] Thus, this herb reduces hyperinsulinemia following a loading glucose infusion.

An Indian study using diabetic rats showed that fasting blood glucose levels returned to normal after 20 days of administration. There was also a rise in insulin and some pancreatic islet cell regeneration.[1122] A Japanese study showed similar results except that pancreas weight and content of insulin were not changed.[1123] The saponins in Gymnema inhibit the reabsorption of bile acids and thus lower cholesterol and triglycerides.

The gymnemic acids and gurmarin have anti-sweet activity in the taste receptors of the mouth.[1124,1125] Gurmarin binds to taste receptor protein blocking the sweet taste. This action decreases after about 2 weeks of continuous exposure due to endogenous production of gurmarin binding proteins. Apparently, once gurmarin binding proteins are developed, the sweet blocking effect cannot be regained.

The leaves are also noted for lowering serum cholesterol and triglycerides. [1126] While studies have shown that a water-soluble acidic fraction of the leaves provides hypoglycemic actions, the specific constituent in the leaves responsible for the hypolipidemic action has not been clearly identified. Some researchers have suggested gymnemic acid as one possible candidate. Further research is needed to clearly determine which constituent is responsible for this effect.

Traditional Medicinal Use: Neither Cook nor King described this herb.

Current Medicinal Use:

- Endocrine Conditions: Gymnema is primarily used to help regulate elevated and/or fluctuating blood sugar levels. Gymnema extract has shown positive clinical results in both type I and type II diabetes. There have been two long-term clinical studies done which demonstrate this. Both of these studies were without placebo. Insulin-dependent diabetics taking Gymnema reduced their insulin requirements and fasting blood glucose, glycosylated hemoglobin, and glycosylated plasma protein levels after using 400 mg/day of a water soluble acidic fraction of the ethanol extract.[1127]

In type I diabetes, Gymnema appears to enhance the action of insulin.An extract of the leaves of Gymnema sylvestre given to 27 patients with type I diabetes on insulin therapy was shown to reduce insulin requirements and fasting blood sugar levels, and to improve blood sugar control.

In a study of type II diabetics, 22 were given Gymnema extract along with their oral hypoglycemic drugs. All patients demonstrated improved blood sugar control; 21 out of the 22 were able to reduce their drug dosage considerably; and five subjects were able to discontinue their medication and maintain blood sugar control with the Gymnema extract alone.[1128]

For Gymnema to lower blood glucose in insulin-dependent diabetics, it needs to be taken continuously for 6 to 12 months. Gymnema is a long-acting herb which necessitates this long treatment time, but has the advantage of avoiding hypoglycemic reactions. Gymnema may be combined with Galega and/or Trigonella, both of which are quick-acting, to achieve more rapid results although sustainable only while taking the other herbs. Gymnema is therefore very useful in someone with hyperglycemia, a craving for sweets, excessive appetite and elevated cholesterol. When taken over a long period of time, Gymnema will lead to increased insulin output thus facilitating athletes developing a higher ratio of muscle mass to body fat.

Gymnema anesthetizes the sweet taste buds lowers hyperglycemia and hypercholesterolemia. A double-blind clinical study revealed that gymnemic acid dramatically and selectively diminished sweet taste (by selectively anesthetizing sweet taste buds) for up to several hours. In addition to lowering blood sugar, appetite was significantly decreased for up to 90 minutes after the sweet-numbing effect.

Pharmacy:
Dried herb: 3 g qd
GS4: 400 µg
1:1 fluid extract – 5-10 ml per day in divided doses. Use less if combining with other hypoglycemic herbs.
1:1 fluid extract – 1-2 ml per day for sweet taste suppression. (Apply drops directly to the tongue, or mix with small amount of water and swish in mouth for 30 sec. Repeat every 2-3 hours.

Drug interactions:
- **Insulin:** may require modification of dosage due to hypoglycemic effects.
- **Glyburide, Tolbutamide:** additive effects (human)
- impaired iron absorption with dried leaf use

Contraindications: No information is currently available from the selected resources.

Toxicity: No information is currently available from the selected resources.

[1118] Shanmugasundaram ER, et al *J Ethnopharmacol* 30, 1990:281 and 295.
[1119] Srivastava Y, et al *Int J Crude Drug Res* 24, 1986:171.
[1120] Shanmugaundaram ER et al *J Ethnopharmacol*, 7, 1983:205.
[1121] Fushiki T, et al *J Nutr*, 122, 1992:2367.
[1122] Okabayashi Y et al *Diabetes Res Clin Pract*, 9, 143:1990.
[1123] Baskaran K, et al *J Ethnopharmacol*, 30, 1990:265.
[1124] Liu HM, et al *Chem Pharm Bull (Tokyo)*, 40, 1992.
[1125] Imoto T, et al *Comp Biochem Physiol*, 100, 1991:309.
[1126] Bishayee A, Chatterjee M. Hypolipidemic and antiatherosclerotic effects of oral *Gymnema sylvestre* R.Br. leaf extract in albino rats fed on a high fat diet. *Phytother Res* 1994;8:118–20.
[1127] Shanmugasundaram ER, et al *J Ethnopharmacol* 30, 1990:281 and 295.
[1128] Baskaran K, Kizar Ahamath B, et al. Antidiabetic Effect of a Leaf Extract from Gymnema sylvestre in Nonon-Insulin Dependent Diabetes Mellitus patients. J Ethnopharm 30:395-305, 1990

Hamamelis virginiana

Hamameliadaceae

Common name: Witch Hazel

Habitat: The shrub is found in all parts of the U.S. and Canada in damp woods and meadows.

Botanical description: A large shrub consisting of several crooked and branching stems arising from the same root, and forming a bushy clump from 8-10 feet high. Leaves alternate, 3-5 inches long and 2/3 as broad. Flowers sessile, 3-4 in a cluster and yellow.

Parts used: Leaves, Bark

Constituents:

Leaves:

- tannins: hamamelitannin (2,5-di-O-galloyl-D-hamamelose), monogalloylhamameloses gallotannins, condensed catechins and proanthocyanins
- flavonoids: quercetin, kaempferol, astragalin, myricitrin
- volatile oil

Bark:

- tannins: hamamelitannins, condensed tannins such as d-gallocatechin, l-epigallocatechin, l-epicatechin
- saponins: volatile oil, resin

Pharmacology [1129]

The proanthocyanidins are potent inhibitors of 5-lipoxygenase and PAF in vitro. Human experiments have demonstrated suppression of UVB mediated sunburn with topical application of Hamamelis lotion.

Hamamelitannin demonstrated in vitro antioxidant activity and protected murine skin fibroblasts from damage induced by UVB irradiation. It protected murine fibroblasts against external active oxygen radicals generated by UVB irradiation by associating with the cell surface through its sugar moiety. Further tests indicated that hamamelitannin has higher protective activity against cell damage induced by superoxide anions than gallic acid (its functional moiety).

In earlier work, hamamelitannin increased the survival rate of fibroblasts compared with controls. Hamamelitannin inhibited superoxide anion radicals at a much lower concentration than ascorbic acid. Further test results supported the superoxide scavenging activity of hamamelitannin. Hamamelis extract demonstrated strong active oxygen-scavenging activity and protected against cell damage induced by active oxygen. The authors recommended Hamamelis as a potential antiageing or antiwrinkle material for the skin.

Vasoconstrictive activity has been demonstrated by intravenous administration of Hamamelis leaf preparations in isolated rabbit arteries. The activity was not blocked by alpha-or beta-sympatholytic agents. Topical application of a Witch hazel leaf extract produced a significant reduction in skin temperature in 30 volunteers. The lowered skin temperature was interpreted as a vasoconstrictive activity.

A Hamamelis concentrate exhibited significant antiviral activity against herpes simplex virus type 1 in vitro.

Medicinal actions: astringent, anti-inflammatory

Historical Use: The American Indians used it as a topical application for inflammation and swelling.

Traditional Medicinal Use:

Specific Indications and Uses: Venous debility, with relaxation and fullness; pale mucous tissues (occasionally deep-red from venous engorgement, or deep-blue from venous stasis); mucous profluvia, with venous relaxation; passive hemorrhages; varicoses; capillary stasis; hemorrhoids, with full feeling; relaxed and painful sore throat; dull, aching pain in rectum, pelvis, or female organs; perineal relaxation, with fullness; muscular relaxation; muscular soreness and aching and bruised sensation, whether from cold, exposure, bruises, strains, or from physical exertion.[1130]

Cook described the leaves as a mild but reliably astringent, with gentle tonic qualities and a soothing influence. He considered it one in a small list of plants that combine diffusive relaxant properties with astringency allowing it to be one of the most bioavailable of all the astringents. While most other astringents excite the tissue that they are astringing, Hamamelis is unique in that it soothes tissues as it astringes, making it very useful in inflamed tissues. He did not discuss the bark, however King found that the bark had similar properties.

- Cardiovascular Conditions: The main indication for Hamamelis was in disorders involving the venous structures, particularly for chronic vascular conditions of mucous tissues, and to old, flabby, fetid ulcers. Hamamelis, both internally and topically, was observed to arrest oozing of blood from mucous surfaces. It was not considered the remedy for active hemorrhage, but for passive bleeding, as from the lungs, stomach, bowels, renal or genital organs its action is satisfactory. King noted that the decoction of the bark was very useful in hemoptysis, hematemesis, epistaxis, hemorrhoids. Hamamelis was also applied in cases of cellulitis, phlebitis, and varicose veins.
- ENT Conditions: King considered few agents more effective in various subacute forms of sore throat, also in sore throat with deep redness and great pain. He found it a very valuable aid, locally, in the treatment of tonsillitis, ulceration of the throat, diphtheria, and acute catarrh.
- Gastrointestinal Conditions: The Eclectics used Hamamelis in excessive mucous discharges, with full, pale, and relaxed tissues. It is specially adapted to diarrhea with a tendency to or associated with passive hemorrhage. Cook noted that Hamamelis soothes the bowels rather than excites them, as many astringents do.
- Genitourinary Conditions: The Eclectics found Hamamelis serviceable in renal affections due to vascular relaxation. Thus, in diabetes insipidus it was considered of some value. It was particularly valued in prolific mucous of the urogenital tract such as vesical catarrh with tenesmus and in irritation of the bladder due to enlarged and relaxed scrotal veins.
  Hamamelis was applied in hemorrhage or catarrh of the bladder and in gonorrhea. It was noted to act mildly on the kidneys without drying the mucous membranes resembling Arctostaphylos, though less tonic and more transient in action. This action was well demonstrated in non-inflammatory hematuria.
- Gynecological Conditions: In female disorders Hamamelis was indicated by ovarian congestion secondary to venous fullness and relaxation suggested by dull, aching, ovarian pain. Dr. Scudder noted that Hamamelis was indicated in chronic uterine congestion, where the cervix is enlarged without abnormal hardness, the os uteri being soft, open, and patulous, and perhaps leucorrhoea or prolapsus present.
  In leucorrhoea, with fullness of the pelvic veins and relaxation of the uterine and vaginal walls, its internal and external exhibition was deemed beneficial. Cook considered Hamamelis an admirable wash in leucorrhea and prolapsus uteri and ani.
  Combined with a small portion of Capsicum, it was observed to be effective in arresting uterine hemorrhage and passive menorrhagia.
  Combined with Cypripedium or Caulophyllum, Hamamelis was used to expedite parturition in nervous patients, and applied hot it gave great relief to the soreness of abdominal muscles and pelvic parts following childbirth. Also, Hamamelis was used as a part of the treatment of inflamed breasts.
- Male Conditions: Hamamelis was used for testicular congestion secondary to venous congestion. For varicocele it was used both internally and locally on the scrotum. However, while it relieves varicocele, too much must not be expected of it in the way of a cure.
- Ophthalmological Conditions: Hamamelis was combined with Hydrastis for purulent ophthalmia and was of pronounced value in hemorrhages into the eye ball, and locally relieves ecchymosis of the lids and conjunctiva.
- Topical Applications: King described its useful form as a poultice in painful swellings as well as in external inflammations such as sprains, contusions, wounds, swellings, burns, as well as in irritated and inflammatory conditions of the external auditory meatus, especially when due to irritation from the presence of inspissated cerumen.
  King used Hamamelis compress for muscular soreness and aching sensations, as of having been bruised, whether from colds, exposures, strains, bruises, or severe muscular action.

Current Medicinal Uses: Hamamelis is useful internally and externally for the treatment of hemorrhoids, varicose veins, bruises and inflamed swellings. Hamamelis is a tonic to the tissues as well, although the tonifying action is not as deep or long-lasting as other tonic herbs. Hamamelis is also effective in stopping uterine hemorrhage and menorrhagia, especially when combined with a small amount of capsicum.

- Cardiovascular Conditions: In an uncontrolled study, 50 patients with painful skin lesions in the anogenital area were treated with a salve containing Witch hazel bark distillate, zinc oxide and vitamins A and D. After a week the healing process was completed in 40 patients. In an uncontrolled trial on 75 patients with itching, painful and bleeding hemorrhoids, application of a salve containing Witch hazel bark resulted in a majority of patients becoming free from symptoms after 3 weeks of treatment.

A comparison of this Hamamelis bark salve with two other salves (one containing corticosteroids) was undertaken in a double-blind trial on 90 patients with grade 1 hemorrhoids. Several patients receiving the witch hazel salve had also received sclerotherapy. All three preparations demonstrated similar efficacy, except that the witch hazel was superior with regard to relief of symptoms: greater reduction in itching and soreness, less frequent bleeding.

In a similar double-blind clinical trial, 90 patients with first-degree hemorrhoids were treated with witch hazel bark ointment and two ointments containing synthetic agents, one of which additionally contained a corticosteroid. Treatment was of 21 days duration, with follow-up examinations on the third, 14th and 21st day of treatment. Four typical symptoms (pruritis, bleeding, burning sensation, sore sensation) were evaluated by both physician and patient. All three ointments proved highly effective. No major differences were found between the three treatment groups but in the case of pruritis, a positive tendency in favor of the witch hazel ointment was observed.

The therapeutic effect of witch hazel on venous tone was studied in patients with varicose veins in an open trial. Four groups were each given different medications and studied by plethysmography for the next 5 hours. In the untreated controls, venous tone decreased during rest. A reference drug had no effect and the increase in venous tone induced by the ingestion of a high dose of Hamamelis-Hydrastis mixture was equivalent to that induced by 150 mg of oligomeric procyanidins.[1131]

- Dermatologic Conditions:[1132] Application of Witch hazel leaf cream twice daily for 2 weeks in an uncontrolled study resulted in complete healing or considerable improvement in 37 patients with various forms of eczema or atopic neurodermatitis.

  Thirty-six patients with endogenous eczema and 80 patients with toxic degenerative eczema were treated in a double-blind, placebo-controlled trial with either Hamamelis salve (25 water distillate from leaf and twigs) or a control preparation. The Hamamelis salve was superior to placebo in the treatment of atopic dermatitis but of no benefit in the treatment of primary irritant contact dermatitis.

  Twenty-two patients with atopic dermatitis were treated with a standardized Hamamelis salve on one arm and a non-steroidal antiinflammatory cream (containing bufexamac) on the other over a 3-week period. Both treatments showed a clear improvement in the symptoms investigated: redness, scaling, lichenification, pruritis, infiltration. The salve contained 25 g of water distillate (from 4 g of fresh leaf and twigs) per 100 g of salve, which was also standardized for Hamamelis ketone (0.75 mg).

  Hamamelis distillate cream (5.35 g Hamamelis distillate containing 0.64 mg ketone/100 g) was compared to 0.5% hydrocortisone cream and an unmedicated cream base in a double-blind, randomized trial on 72 patients with moderately severe atopic eczema over a period of 14 days. All treatment regimes significantly reduced itching, erythema and scaling after 1 week. The hydrocortisone cream proved superior to the Hamamelis distillate, which was no more effective than the unmedicated base.

  In a previous study by the same authors, creams containing various concentrations of Hamamelis distillate (containing 0.64-2.56 mg Hamamelis ketone/100 g) were compared to a Matricaria cream and a 1-hydrocortisone cream on human volunteers who had erythema induced by UV irradiation and cellophane tape stripping of the horny layer. A mild antiinflammatory effect was demonstrated for the Hamamelis cream, especially if incorporated into a phospholipid base. Although less active than hydrocortisone cream, Hamamelis cream was superior to the unmedicated cream base. The antiinflammatory activity described here could, at least in part, be due to a vasoconstrictor activity. A mild antiinflammatory effect for standardized Witch hazel salve (25 g distillate from 4 g fresh leaf and twigs, 0.75 mg of ketone, all per 100 g), compared to its neutral ointment base, was demonstrated by instrumental testing and transcutaneous oxygen measurement in 22 healthy subjects and five patients with dermatosis.
- Gynecological Conditions: If used in a vaginal douche, it will address purulent mucus discharge from inflamed tissues as well as blood loss.

  A randomized open study of 300 mothers examined the effectiveness of Hamamelis water, ice or Epifoam in achieving analgesia for episiotomy associated with forceps delivery. All three agents were equally effective at achieving analgesia on the first day. Approximately one-third of the mothers derived no benefit from any of the treatments.[1133]

Pharmacy: Distilled witch hazel water for topical application
Cream, Poultice, Compress, Vaginal Injection
Tincture 1:5 25% EtOH; sig 2-4 ml TID
Infusion 1 tsp./cup; sig 1 cup TID [1 tsp. = 2.5 g]

Drug Interactions:[1134]

When extracted in hot water, tannins can precipitate alkaloids from plants, alkaloidal drugs, proteins, salicylates, iodine and iodides, metals, minerals and B vitamins thereby slowing, reducing or blocking their absorption. The drug-tannin reaction can interfere with dosing if sources of the two compounds are combined in solution prior to administration.

Drug-tannin precipitates are maintained in an alkaline pH and dissolve in an acid environment such as the stomach. Unless the solution is shaken well, precipitates will settle in the bottom leading to low or no amounts in initial doses and high or toxic amounts when the last doses from the bottle are taken. The precipitates are generally soluble in mixtures containing over 15-40% alcohol. Tannins will not precipitate low concentrations of alkaloidal salts in the presence of many of the gums.

Contraindications: The use of tannins is contraindicated or inappropriate in cases of constipation, iron deficiency and malnutrition.[1135]
Brinker speculates that prolonged internal use should be avoided due to the high tannin content.[1136]

Toxicity: Generally, Hamamelis is considered a safe herb. No other information is provided in the selected resources.

Harpagophytum procumbens

Pedaliaceae

Common name: Devils Claw

Habitat: This plant is native to SW Africa's arid regions.

Botanical description: The plant bears a large, hooked claw-like fruit. The tuber is up to 6 cm in diameter, with a yellowish-brown longitudinally striated bark. The roots are collected at the end of rainy season.

Parts used: Tuber (root)

Constituents [1137]

- Iridoid glycosides (.5 – 3%), primarily harpagoside (1.4%-2.0%), harpagide, procumbide
- Sugars (over 50%), the sugars lead to an unusually high water solubility
- Triterpenes, phytosterols (beta-sitosterol, stigmasterol), phenolic acids and glycosides, flavonoids, Harpagoquinone

Pharmacology: Harpagoside and other iridoid glycosides found in the plant may be responsible for the herb's anti-inflammatory and analgesic actions. [1138] The exact mechanism is not known. Isolated iridoid glycosides have been demonstrated to not be as effective in isolation as the whole plant.

Harpagophytum is comparable with phenylbutazone and cortisone in its antiinflammatory action.[1139] [1140] However, no change in inflammatory mediators has been demonstrated in studies of these herbs.

Medicinal actions: antiinflammatory, anti-rheumatic, analgesic, sedative, bitter, choleretic

Traditional Medicinal Use: *Harpagophytum procumbens* has been traditionally used by natives of Southern Africa for rheumatic and gastrointestinal complaints.

Current Medicinal Use: Harpagophytum possesses notable analgesic effects. Harpagophytum is also vasodilatory thus augmenting circulation through the joints. Harpagophytum is a bitter and thus a digestive stimulant and strengthener.

- Gastrointestinal Conditions: The bitter principle of this plant enhance digestion overall.
- Hepatobiliary Conditions: As a bitter, *Harpagophytum procumbens* is especially stimulating to the liver and gall bladder. It is therefore useful as a mild depurative.
- Inflammatory Conditions: The main indications for *Harpagophytum procumbens* are arthritis, ankylosing spondylitis, rheumatoid arthritis, neuralgia, gout, myalgia and fibrositis. It is indicated for several reasons, one of which is its significant antiinflammatory activity. Other actions of Harpagophytum that aid in its anti-arthritic application are its analgesic and vasodilatory effects. The combination of these actions results in decreases joint swelling and pain.

A double-blind study compared Devil's claw (2,610 mg/day) to the drug diacerhein (100 mg/day). [1141] Diacerhein is a member of a drug category called the slow-acting drugs for osteoarthritis (SADOAs). Unlike anti-inflammatory drugs such as ibuprofen, SADOAs don't give immediate relief, but rather act over a period of weeks to gradually reduce arthritis pain. 122 patients with arthritis of the hip and/or knee were given either devil's claw or diacerhein for a period of 4 months. After four months, considerable improvements in osteoarthritis symptoms were seen in both groups. However, use of analgesic (acetaminophen-caffeine) and nonsteroidal anti-inflammatory (diclofenac) medications was significantly reduced in the Harpagophytum group, which also had a significantly lower rate of adverse events. While impressive, the fact that diacerhein itself is not universally accepted as an effective treatment for osteoarthritis makes the results less than fully convincing.

A number double-blind studies show a positive outcomes with Harpagophytum. One followed 89 individuals with rheumatoid arthritis for a 2-month period (670 mg of extract, 3% glycoside TID). The group given Devil's claw showed a significant decrease in pain intensity and improved mobility.[1142] Another, with 50 people experiencing various types of arthritis found that 10 days of treatment (800 mg of extract, 1.5 % iridoid glycoside TID) with devil's claw provided significant pain relief. [1143] Another double-blind study of 118 individuals with back pain reported that Devil's claw (800 mg extract TID) was also helpful for reducing low back pain. [1144] One double-blind study of 197 individuals with back pain found devil's claw only marginally effective.[1145] In this study, two daily doses of oral Harpagophytum extract (600 and 1200, containing 50 and 100 mg of the marker harpagoside) were compared with placebo over 4 weeks. A total of 183 patients completed the study. The numbers of pain-free patients were three (placebo group), six (600 mg group) and 10 (1200 mg group) ($P = 0.027$). However, research has not entirely supported the use of Devil's claw in alleviating arthritic pain symptoms [1146, 1147] and many herbalist report mixed results with it.

In addition, *Harpagophytum procumbens* stimulates the flow of lymph. These combined actions make *Harpagophytum procumbens* even more useful in the treatment of arthritis by aiding in the digestion and absorption of nutrients that are incorporated into connective tissue (note: HCl is often low in people with arthritis) and in the elimination of metabolic waste products from the joints.

Pharmacy: Some debate exists as two whether Harpagophytum be taken in an enteric coated form as the iridoid glycosides may be destroyed by low pH. However, some argue that the secondary metabolites are the active constituents and that what happens in the stomach is superferlous.

Powdered tuber: 2.5 g qd as a single agent
1:5 Tincture: 5 ml TID

Contraindications:
Harpagophytum is contraindicated in stomach inflammation and peptic ulcer disease based on empirical evidence.[1148] The choleretic action may contraindicate its use in the presence of gallstones.

Toxicity: No information is currently available. Diarrhea and decreased appetite are the most common complaints reported in trials.

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Humulus lupulus

Cannabinaceae

Common name: Hops

Habitat: Alder swamps and damp hedges. Largely cultivated throughout the world.

Botanical description: A 3-6 m tall plant that twines to the right. The leaves are coarsely pubescent, long-petioled, 3-7 lobed with coarsely serrate margin. There are 2-4 cm long, yellowish-green female flowers (the hop). The flowers are cone-like with a small seed-like fruit at the base of the flower.

Parts used: Strobile

Constituents:

- Bitter substances (acylphloroglucides, 10%) present in the resin: humulone and lupulone and others all of which are labile; These bitter principles are thought to be responsible for the appetite-stimulating properties of hops.
- Essential oil (0.3%-1.0% in hops): mono- and sesquiterpenes (more than 150 have been identified)
- Tannins (2%-4% in hops)
- Flavonoids (kaempferol and quercetin mono- and diglycosides)
- Phenol-carboxylic acids (ferulic and chlorogenic acids)

Pharmacology: The sedative principle in hops has not yet been conclusively identified. However, during storage and after oral intake, humulone and lupulone split off a C5-alcohol (2-methyl-but-3-en-ol)which has been shown in animal studies to have a strong sedative effect.[1149]

Several unique flavonoid compounds have recently been isolated from *Humulus lupulus* and their presence has been detected in beer. Their chemical structures are similar to other plant-derived compounds, many present in the human diet, that have been shown to have cancer chemopreventive properties due, in part, to inhibition of cytochrome P450 enzymes that activate carcinogens. Additionally, preliminary studies have shown these flavonoids (at 100 microM) to be inhibitory of P450-mediated activation reactions in a variety of in vitro systems. The in vitro effects of these phytochemicals on cDNA-expressed human P450 enzymes CYP1A1, CYP1B1, CYP1A2, CYP3A4 and CYP2E1 were examined by the use of diagnostic substrates and the carcinogen AFB1 (aflatoxin B1). These results suggested that the Hop flavonoids are potent and selective inhibitors of human cytochrome P450. [1150]

Medicinal actions: nervine, sedative, hypnotic, tonic, diuretic, anodyne, aromatic bitter, anaphrodisiac, febrifuge

Traditional Medicinal Use:

King described Humulus as tonic, hypnotic, febrifuge, antilithic, and anthelmintic and noted that their tonic and anthelmintic properties are small, depending upon their bitterness. Humulus was considered by some to correct lithic acid deposits.

- Gastrointestinal Conditions: Humulus was observe to exert stomachic effects. It was considered extremely efficient in dyspepsia where restlessness and a brooding disposition are prominent features. Fermentative dyspepsia with eructations, often responds well to Humulus.
- Nervous Conditions: Humulus was principally used for its sedative or hypnotic action, producing sleep, removing restlessness, and abating pain, although King did not consider it a consistent remedy. A pillow stuffed with hops has long been a popular remedy for procuring sleep. Hops were useful in delirium tremens to allay nervous irritation
- Topical Applications: Externally, in the form of a fomentation alone, or combined with E. perfoliatum or other bitter herbs, hops have proved beneficial in pneumonia, pleurisy, gastritis, enteritis and as an application to painful swellings or tumors. An ointment made with 2 parts of Datura leaves and 1 of hops has proved an effectual application in eczema, ulcers, and painful tumors.

Current Medicinal Use:

The main internal indications for Humulus are sleeplessness from worry and anxiety, nervous gastropathies, and to reduce sexual over excitement in men(i.e. premature ejaculation). Externally, hops may be used as a compress over skin injuries to reduce inflammation and to speed healing.

- Nervous Conditions: Hops is very sedating to the central nervous system. Ingestion of hops eases tension and anxiety and is especially useful when this tension leads to restlessness, headache, and indigestion. Nervous exhaustion indicates its use, but Humulus is a strong sedative rather than a tonifier as are other nervines.

Humulus is well indicated to decrease sexual excitement and sexual nervousness. Humulus contains phytoestrogens (30,000-300,000 per 100g). Because the phytoestrogens have an anti-androgen effect, Humulus will suppress sexual excitement in men. In turn, for an aphrodisiac effect, hops have been combined with camphor. [1151]

Although not as strong a sedative as Valerian, hops are effective for sleep problems. For general nervous disorders, hops are commonly combined with Valerian. The German Commission E monograph recommends 500 mg for anxiety or insomnia. [1152]

Humulus is the main ingredient of beer and many of the medicinal effects are evident with the consumption of beer. (Keep in mind, however, that beer is more weakly concentrated in constituents and is addictive).

- Gastrointestinal Conditions: Humulus is a bitter and has antimicrobial properties, is an astringent and a smooth muscle relaxant. These properties combine to make Humulus an effective digestive aid. Humulus will tonify and strengthen the digestive system while restoring normal peristalsis. Thus, Humulus is useful for the treatment of IBS, Crohn's and nervous gastropathies and combines well with carminative herbs.

Pharmacy: Infusion: 1 tsp. (approx. = 0.5 g) / cup ; sig 1 cup TID or hs
Powder: sig 0.5 – 1.0 g/ day
1:5 tincture 60% EtOH: sig 2-3 ml TID; weekly max. = 40ml
Hop pillow for insomnia (effective for some and for others will produce nausea and headache).

Drug Interactions:

- Barbiturates and Sedatives: Humulus may potentiate the activity of these drugs or have an additive effect.

Contraindications: Brinker contraindicates the use of Humulus in depression (empirical) and allergic hypersensitivity due to contact or inhalation.[1153]

Toxicity: No information is available from the selected resources.

[1149] Wohlfart R, Hansel R and Schmidt H, *Planta Medica,* 1983,48:120.

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[1151] Weiss, R.F. Herbal Medicine. Verlag GmbH, Stuttgart, 1996. p. 285-6

[1152] Blumenthal, M., *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, First Edition, American Botanical Council. 1998

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Hydrangea arborescens

Saxifragaceae

Common name: Wild Hydrangea

Habitat: United States

Botanical description: A marsh plant with roots of variable length and thickness. The exterior is pale grey and tough, the inside is white and succulent.

Parts used: Roots and rhizome

Energetics:[1154]

- ☯ Hydrangea is pungent, sweet, cool, neutral, dissolving, restoring and calming. It enters the Kidney, Urinary Bladder and Lung meridians.
  - Promotes detoxification, clears damp cold, removes deposits and relieves eczema; promotes urination and drains fluid congestion: Indicated in damp cold obstruction, Lin syndrome
  - Promotes and armonizes urination, removes stagnation and relieves irritation and pain: Indicated in genitourinary qi stagnation (stagnation in the lower jiao), Lung dryness
  - Clears heat and damp, and reduces infection and inflammation: Indicated in damp heat of the Kidney and Urinary Bladder.
  - Compare with Dianthus Qu mai.

Constituents: Flavonoids, hyrangin (glycoside), saponin, volatile oil, resin, furanocoumarins[1155]

Pharmacology:

- The furanocoumarins promote smooth muscle relaxation of the ureter allowing a kidney stone to pass (other furanocoumarin containing herbs include Ammi visnaga, Peucedanum, Leptotania and Ruta graveolens).[1156]

Medicinal actions: Diuretic, anti-lithic, soothing genito-urinary tonic

Medicinal use: (No human trials had found at this time)

- Genitourinary Condtions: The specific indications for Hydrangea include: "frequent urination with heat, burning, accompanied with quick, sharp, acute pains in the urethra; partial suppression of urine with general irritation and aching or pain in the back, [and] pain from the passage of renal sand."[1157] Hydrangea gives tone to the kidneys, improving their function, arresting the formation of urinary deposits and calculi; therefore its action is more prophylactic. It relieves irritation of the bladder and urethra[1158]: Hydrangea is useful in the acute and prophylactic treatment of renal calculi. It works best in an alkaline urine, eliminating phosphate and uric acid crystals. Hydrangea is reduces stone formation from these crystals and causes diuresis. Hydrangea is considered a sedative diuretic, i.e., it relieves the pain associated with renal lithiasis. [1159]
- PulmonaryConditions: Hydrangea influences the respiratory mucosa, relieving bronchial irritation.

Pharmacy: Tincture 1:5 25%; sig 2-4 ml TID
Decoction: 2 tsp. dried root/cup water TID

Drug interactions:

Contraindications:

Toxicity:

[1154] Holmes, Peter. Energetics of Western Herbs, Vol. 2, 2nd ed. Artemis Press. 1994. p. 682-4

[1155] Wren, R.C., Potter's New Cyclopedia of Botanical Drugs and Preperations, Potter's limited, England. 1988.

[1156] Murray, M., Pizzorno, J. The Textbook of Natural Medicine, 2nd ed. Churchill Livingstone. 1999 p. 1366

[1157] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 444

[1158] Scudder , JM. Specific Medication and Specific Medicines, 15th ed. Eclectic Medical Publications, Sandy, OR, 1903 p155

[1159] Source unknown

Hydrastis canadensis

Ranunculaceae

Common name: goldenseal

Habitat: shaded woodlands of the American southeast.

Botanical description:

Part used: root, rhizome

Historical use: The Cherokee use of Hydrastis was as a cure for cancer.

Energetics:

Constituents: [1160]

- isoquinolone alkaloids: chief alkaloids hydrastine, berberine, (-)-canadine

Pharmacology:

Berberine is cytotoxic. It is also a mild laxative and anti-inflammatory as well as a vasoconstrictor and hypertensive. [1161] Little research has been done with Hydrastis itself. Berberine, which ranges from 0.5–6.0% of the alkaloids present in Hydrastis root and rhizome, has been the most extensively researched. Berberine has shown antimicrobial activity against bacteria, protozoa, and fungi, including: [1162] Staphylococcus sp., Streptococcus sp., Chlamydia sp., Corynebacterium diphtheria, E. coli, Salmonella typhi, Vibrio cholerae, Diplococcus pneumonia, Pseudomonas sp., Shigella dysenteriae, Entamoeba histolytica, Trichomonas vaginalis, Neisseria gonorrhoeae, N. meningitidis, Treponema pallidum, Giardia lamblia, Leishmania donovani, Candida albicans.

Its action against some of these pathogens is actually stronger than that of prescription antibiotics commonly used for these pathogens (in vitro). Berberine's action in inhibiting Candida, as well as pathogenic bacteria, prevents the overgrowth of yeast that is a common side-effect of antibiotics.The antimicrobial activity of berberine increases with pH in all organisms studied. At pH of 8.0, its antimicrobial activity in vitro is typically two to four times greater than it is at pH 7.0, which in turn is one to four times greater than at pH 6.0. This suggests that alkalinization will improve its clinical efficacy, particularly in the treatment of urinary tract infections. [1163]

Researchers investigated berberine's ability to inhibit the adherence of group A streptococci to host cells based on the fact that the therapeutic effect of berberine appeared to be greater than its direct antibiotic effects. Berberine's ability to inhibit the adhesion of Streptococci to host cells has several modes of action. First, berberine causes streptococci to lose lipoteichoic acid (LTA). LTA is the major substance responsible for the adhesion of the bacteria to host tissues. Another important action of berberine is preventing the adhesion of fibronectin to the Streptococci as well as eluting already bound fibronectin.The results of the study indicate that berberine interferes with infections due to group A streptococci not only by inhibiting streptococcal growth, but also by blocking these organisms from attachment to host cells. The study implies berberine-containing plants may be ideal in the treatment of "strep throat", a condition historically treated with Hydrastis by American naturopathic physicians. [1164]

Berberine produces an antipyretic effect three times as potent as aspirin in a pyretic model in rats. While aspirin suppresses fever through its action on prostaglandins, berberine appears to lower fever by increasing the immune system's handling of fever-producing compounds from microorganisms. [1165]

Medical actions: tonic, antimicrobial, anti-infective, immunostimulant , anti-cancer, anti-pyretic

Traditional Medicinal Uses:

Specific Indications and Uses: Hydrastis is specifically indicated in catarrhal states of the mucous membranes, when unaccompanied with acute inflammation. An apparent exception to this is in acute 'purulent otitis media, in which it is said to act better than in chronic conditions; gastric irritability; irritation of parts with feeble circulation; muscular tenderness and soreness, worse under pressure or on motion; passive hemorrhages from uterus and other pelvic tissues; skin diseases depending on a gastric abnormality, indicating Hydrastis.[1166]

Cook considered this root as one of the purest tonics, the stimulating property predominating, but the relaxing property well marked. He noted that Hydrastis acts slowly and steadily, holding its influence for several hours and that its influence upon the system is very general. However, he also stated that there seems to be no organ or tissue but can be benefited by its appropriate use. It was deemed most advantageous for mucous membranes, the digestive system, and the uterine organs and was considered unlike almost all other stimulating tonics in soothing the irritation connected with feeble and congested conditions of mucous membranes. (Cook goes on to demonstrate the rivalry with the Eclectics over who "discovered" this herb).

In describing its action on mucous membranes, Cook observed that Hydrastis first secures the discharge of any viscid secretion, then diminishes secretions without suppressing them, improving the overall healthy character. Thus, its toning influence will arrest excessive mucous discharges though it is not astringent. At the same time Hydrastis relieves turgid achings and disposes healing of any ulcerations.

King observed that Hydrastis appeared to stimulate the respiratory and circulatory systems, imparting increased tone and power with increased arterial tension and blood pressure in the capillaries. For these reasons he found it valuable in overcoming blood stasis as research of the time had shown that it increased contraction of arterial smooth muscle, but not that of the gastrointestinal tract. He also noted that it was a valuable agent in debility of smooth muscle. He described it as bitter, inducing activity of the salivary glands, sharpening the appetite and aiding digestion. In general, Hydrastis was used by the Eclectics in convalescence from diseases having excessive mucoid discharges, or where hemorrhage has played an important part.

- Dermatologic Conditions: Hydrastis has been used to some extent in cutaneous diseases dependent upon gastric difficulties. Cases of eczema, including those around the outlets of the body and secondary to gastrointestinal disturbances, have been cured by its internal use alone. The local use at the same time hastens cure.
- ENT Conditions: In nasal catarrh, Hydrastis was applied as a snuff; in aphthous sores as a wash with Myrica; in diphtheria and scarlatina with Myrica, Capsicum and Commiphora as a gargle. Hydrastis was considered a valuable local agent by the Eclectics in afflictions of the nose and throat that are subacute and naso-pharyngeal catarrh where the mucous membranes are dry and the secretions being altered in quantity and character. In catarrhal hypertrophy with profuse discharge and thickening of the mucous membrane, Hydrastis was regarded as without an equal.
- Gastrointestinal Conditions: Hydrastis was known to exert its chief action upon the mucosa and glandular tissue of the gastrointestinal tract. Hydrastis was used to improve appetite and digestion and was considered one of the most acceptable of all general tonics in indigestion, feeble assimilation, biliousness, prolapsus, and all forms of debility. As a stimulant of the gastric and intestinal mucosa, its action was well regarded, particularly in functional disorders and in disorders of a sub-acute character and in atonic states with increased flow of mucus.
  In chronic dysentery and diarrhea, and in either chronic or typhoid ulceration of the bowels, Hydrastis was considered unsurpassed. Hydrastis was considered equally as beneficial in catarrhal states of the intestines. King stated that Hydrastis should be considered in obstinate constipation due to hepatic obstruction, hepatic congestion or atonic conditions of the intestinal glands. Prof. King considered it a valuable tonic for enfeebled states of the alimentary tract in infants and children, and recommended it for the same purpose in convalescence from gastrointestinal diseases.
  Local application, with the internal use, has been applied in hemorrhoids, fissured anus, ulcers and eczema of the anus, and prolapsed and ulcerated rectum.
- Genitourinary Conditions: In catarrh of the bladder, Hydrastis was used both orally and as an injection through the urethra. Weak kidneys were considered much improved by its internal use, although it may prove too exciting in cases that exhibit sub-acute inflammation of the bladder or bowels. Dr. King used it for incipient stricture, inflammation, and ulceration of the epithelium of the bladder.
- Gynecological Conditions: In leucorrhea, Hydrastis was applied as a douche. Several Eclectic physicians have employed Hydrastis in hemorrhagic conditions of a gynecologic nature. However, it was said to be too slow a remedy for active post-partum hemorrhage, but may be employed for the control of passive hemorrhage.
- Hepatobiliary Conditions: Hydrastis was observed to mildly facilitate the discharge of bile from the gallbladder and secretion from the hepatic tubuli, and was used as an aperient to treat some forms of constipation.
- Male Conditions: Hydrastis was used for cystic congestion and chronic difficulties of the prostate gland and in some forms of spermatorrhea.
- Musculoskeletal Conditions: Specific Hydrastis was used by the Eclectics in cases of myalgic tenderness and soreness due to various causes, indicated where the symptoms are better during rest but aggravated by pressure and by motion.
- Ophthalmological Conditions: Hydrastis was used by the Physiomedicalists in the treatment of purulent and granular ophthalmia, with ulceration of the cornea in which Hydrastis with a limited portion of Lobelia, Capsicum, or Commiphora as an eyewash.
- Pulmonary Conditions: Added to relaxant cough syrups, Hydrastis was used to support the respiratory system.
- Topical Applications: As an external application, it was considered valuable in ulcers, bruises and wounds where there is a tendency to congestion without incipient mortification. It was observed to enhance the healing process.
  The Physiomedicalists considered it as one of the best remedies for dressing irritable chancres and buboes. It was also used as a wash or added to glycerin and used as an ointment or for local dressing.

Current Medical Uses:

- ENT Conditions: Hydrastis is frequently used for chronic sinusitis. Adminstration through nasal lavage in a saline solution has been an effective treatment and prophylactic practice for many patients.

- Gastrointestinal Conditions: Hydrastis is most effective by direct contact. It does not seem to be an effective oral antibiotic, probably because the blood levels of berberine that can be achieved by taking Hydrastis orally are far too low to matter. [1167] However, Hydrastis may also be beneficial in treating sore throats and diseases of the digestive tract because it can contact the affected area directly.
  Because of its antimicrobial activity, Hydrastis has a long history of use for infectious diarrhea. Its major alkaloid, berberine has been shown beneficial for people with infectious diarrhea in some double-blind studies. [1168, 1169] Negative studies have generally focused on people with cholera, while positive studies have looked at viral diarrhea or diarrhea due to strains of *E. coli.*
  Berberine has shown significant success in the treatment of acute diarrhea in several clinical studies. It has been found effective against diarrheas caused by E. coli (traveler's diarrhea), *Shigella dysenteriae* (shigellosis), *Salmonella paratyphi* (food poisoning), *Klebsiella* sp., *Giardia lamblia* (giardiasis), and *Vibrio cholerae* (cholera). Studies in hamsters and rats have shown that berberine also has significant activity against *Entamoeba histolytica,* the causative organism of amebiasis. [1170, 1171]
  In one study, 65 children under the age of 5 years with acute diarrhea due to E. Coli, Shigella, Salmonella, Klebsiella or E. faecalis were treated with 25 mg of berberine every 6 hours or standard antibiotic therapy. Patients treated with berberine responded better than those given antibiotics.[1172]

  In another study, 40 children aged 1-10 years infected with the parasite giardia received either berberine (5mg/kg body weight each day), the drug metronidazole (10 mg/kg body weight each day), or a placebo of vitamin B syrup in three divided doses. After 6 days, 48% of patients treated with berberine were symptom-free and, on stool analysis, 68% were *Giardia*-free. In the metronidazole (Flagyl) group, 33% of patients were without symptoms and, on stool analysis, all were *Giardia*-free. In comparison, 15% of patients on placebo were asymptomatic and, on stool analysis, 25% were *Giardia*-free. These results indicate that berberine was actually more effective than metronidazole in relieving symptoms at half the dose, but was less effective than the drug in clearing the organism from the intestines.
  In one study, patients with traveler's diarrhea randomly received berberine sulfate 400mg in a single dose or served as controls. In treated patients, the mean stool volumes were significantly less than those of controls during three consecutive 8 hour periods after treatment. At 24 hours after treatment, significantly more treated patients stopped having diarrhea as compared with controls (42% vs. 20%).For those patients planning to travel to an underdeveloped country or an area of poor water quality or sanitation, the prophylactic use of berberine-containing herbs during, and 1 week prior to and after visiting may be useful. [1173, 1174]
- Infectious Conditions: The famous herbalist Paul Bergner has pointed out, there are three things wrong with taking Hydrastis for colds: (1) there is no credible evidence that Hydrastis increases immunity; (2) the herb was never used historically as an early treatment for colds; and (3) antibiotics are not effective against colds anyway. [1175]
- Genitourinary Conditions**:** Since berberine is concentrated in the bladder, Hydrastis may be useful in resolving bladder infections.
- Hepatobiliary Conditions: Berberine has been shown in several clinical studies to stimulate the secretion of bile (cholerectic effect) and bilirubin. In one study of 225 patients with chronic cholecystitis, oral berberine doses of 5-20mg three times a day before meals caused, over a period of 24-48 hours, disappearance of clinical symptoms, decrease in bilirubin level, and an increase in the bile volume of the gall bladder. Berberine has been shown to correct the hypertyraminemia of patients with liver cirrhosis. It prevents the elevation of serum tyramine following oral tyrosine load by inhibiting the enzyme tyrosine decarboxylase found in bacteria in the large intestine. Berberine inhibits tyrosine decarboxylase and tryptophanase activities of *Streptococcus faecalis* and *E. coli*, but not those of animal enzymes. Tyramine is believed to be responsible for some of the cardiovascular and neurological complications of liver disease, such as hepatic encephalopathy. The accumulation of tyramine and its derivatives may cause lowering of peripheral resistance, with resultant high cardiac output, reduction in renal function, and cerebral dysfunction. Berberine, by lowering plasma tyramine levels, helps prevent the complications of cirrhosis. This tyramine-lowering effect of berberine may have significance in other conditions as well. [1176, 1177]
- Ophthalmological Conditions: Berberine has shown remarkable effect in the treatment of trachoma. Trachoma, an infectious eye disease due to the organism *Chlamydia trachomatis,* is a major cause of blindness and impaired vision in underdeveloped countries. The drug sulphacetamide is currently the most widely used anti-trachoma drug. In clinical trials comparing berberine (0.2%) and sulphacetamide (20.0% solution), sulphacetamide showed the best improvement (decrease in conjunctival discharge, edema, and papillary reactions), but the conjunctival scrapings of all patients receiving sulphacetamide were still positive for *Chlamydia trachomatis*. These patients had a high rate of recurrence of the symptoms. In contrast, patients treated with the berberine solution showed very mild ocular symptoms, which disappeared more gradually, but their conjunctival scrapings were always negative for *Chlamydia trachomatis*. These patients did not suffer relapse even 1 year after treatment. [1178, 1179]

Tropism of Berberine containing plants according to Herb Joyner Bey:
Hydrastis canadensis: gastrointestinal, genitourniary, respiratory
Berberis vulgaris : genitourinary
Berberis aquifolium: skin (acne, psoriasis, eczema)
Coptis chinensis: gastrointestinal, skin (carbuncles, furuncles)

Current Research Review:
Search of Medline revealed no human trials as of 11/20/02

Pharmacy:
Studies on the use of Hydrastis in gastrointestinal conditions used 400–500 mg berberine TID; 3–5 ml of tincture TID can also be used.
dried root or as infusion (tea): 2–4 g
tincture (1:5): 6–12 ml (1.5–3 tsp)
fluid extract (1:1): 2–4 ml (0.5–1 tsp)
solid (powdered dry) extract (4:1 or 8–12% alkaloid content): 250–500 mg.

Drug Interactions: [1180]

- **Sulphacetamide** (positive)**:** see Ophthalmological Conditions above.
- **Antibiotics** (positive)**:** In vitro evidence suggests berberine may induce susceptibility to penicillin and chloromycetin of some enteric bacteria that were previously resistant.
- **Pentobarbital** (positive): Animal studies show that berberine increased sleeping time.
- **Isopernaline** (positive): Hydrastis extract potentiated the smooth muscle relaxing effect (in vitro- trachea), possibly due to β-adrenergic agonistic effect.

Contraindications: King noted that may cause harm in acute inflammatory conditions. Brinker contraindicates the use of Hydrastis in pregnancy due to the uterine stimulant activity of berberine (animal studies) , renal disease (empirical), hypertension (speculative), acute stomach inflammation (empirical and human study) and in jaundice of newborns (animal study)[1181]

Toxicity: No information is available from the selected resources.

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[1179] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p.293
[1180] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 110-111
[1181] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 110

Hyoscyamus niger

Solanaceae

Common name: Henbane

Habitat: Hyoscyamus is native to Europe. It grows in wastelands.

Botanical description: The plant is a biennial or annual. The stems are less than 5 mm in diameter and are quite hairy and slightly sticky. The leaves of the annual plant are smaller and sessile. The leaves of the biennial plant are larger, up to 30 cm long, ovate or lanceolate, dentate margin and hairy in their second year. The flowers are five-lobed, tubular, yellow with purplish veins. The annual plants flower in July or August and the biennial plants flower in May or June.

Historical Use: Hyoscyamus also has psychotropic actions and is another herb that was used by European witches in the creation of their hallucinogenic experiences.

Parts used: Leaves and flowering tops

Constituents: [1182]

Seed:

- Tropane alkaloids (0.05-0.3% seed, *0.05- 0.28% leaf*): chief alkaloid L-hyoscyamine, under storage conditions changing to some extent into atropine; scopolamine and hyoscine, mandragorine, and others. Hyoscyamine refers to the L-isomer, the most typical active constituent of Atropa, Hyoscyamus and Datura. It converts to the D-isomer during the drying process creating atropine, the racemic mixture of D,L-hyoscyamine. Scopolamine is the L-isomer of hyoscine.
- Fatty oil
- Flavonoids: including, among others, rutin

Medicinal actions: Antispasmodic, anodyne, sedative, mydriatic, hypnotic

Pharmacology: In the parasympathetic nervous system atropine and hyoscyamine blocks the muscarinic cholinergic receptors causing central nervous system stimulation followed by depression. The alkaloids also cause hallucinogenic and hypnotic effects (lowered brain activity during which time deep sleep does not occur, but dreams do). This inhibition does not affect the nicotinic receptor activity on ganglia and motor end-plates.

Atropine is a CNS stimulant with a tropism for the heart, lung and abdominal organs. In the peripheral nervous system the anticholinergic actions include reduction of gastrointestinal secretions and motility as well as relaxation of bronchioles and skeletal muscle. Furthermore, they relieve muscular tremors of central nervous origin. The spectrum of actions of Hyoscyamus niger additionally includes a sedative effect. [1183]

In contrast, Hyoscine does not stimulate the central nervous system and is in fact a CNS sedative which may be helpful in allaying motion sickness. It has a greater influence on the eye and secretory glands. Both atropine and hyoscine will dilate the pupil of the eye when prepared into ophthalmic eye drops.

The alkaloids are eliminated by the kidneys.[1184]

Traditional Medicinal Use:

Specific Indications and Uses: Nervous irritability, with unrest and insomnia; face flushed and pupils dilated; fright, terror, restlessness in sleep; loquaciousness; busy delirium of a low muttering character, or with singing, talkativeness, amusing hallucinations and illusions, etc.; garrulousness; destructiveness; sharp, dry, nervous cough, worse upon assuming a recumbent position muscular spasms; choking sensations; rapid and palpitating cardiac action.[1185]

The Eclectic physicians considered Hyoscyamus as part of the special sedatives and observed it to be a powerful narcotic and potentially poisonous, though fatalities from use of it or its alkaloids was rare. The physiological action of Hyoscyamine was known to differs from that of Datura and Atropa only in by causing the same effects, but to a lesser degree.

Hyoscyamus is a remedy for spasm and pain—particularly for spasmodic pain.

As a special sedative, Hyoscyamus was applied in neuralgic and spasmodic conditions, allaying pain, soothing excitability, inducing sleep, and arresting spasm. Inflammatory cases presenting with nervous excitability, but only with mild fever indicated Hyoscyamus. It was also used to relieve gout, rheumatism.

- Behavioral and Psychological Conditions: Hyoscyamus was highly valued in the treatment of the various forms of "insanity". It was especially commonly used in acute and chronic mania where cases most benefited were those with great excitation, a tendency to destructiveness, delusions, epileptic fits, and quarrelsomeness. Hyoscyamus was also used to quell nervous disturbances manifested by low muttering delirium, or by singing and talkativeness during fevers,.

- Gastrointestinal Conditions: Hyoscyamus was used to improve the action of bitter tonics in allaying irritation of the gastrointestinal tract although it was not applied when constipation was present..
- Genitourinary Conditions: Hyoscyamus was considered an excellent agent in irritable, spastic conditions of the bladder and urethra. Decreased nervous tone indicated its use in urgency, tenesmus, and incontinence. It was found to be a urethral sedative, and combined with camphor (pill), had long been employed to relieve urethral irritation after the passing of catheters.
- Neurological Conditions: The Eclectics described Hyoscyamus a cerebro-spinal sedative. Nervous irritation without congestion, or high fever, but with disturbance of the circulation in the cerebrum and tendency to mental aberrations were the key-notes to its use. All these cases when showing anemia and nervous depression, will yield to Hyoscyamus or its alkaloids. However, its sedative effect required larger doses, which was more transient and less powerful than Atropa.

Hyoscyamus was used to relieve pain and promote sleep, having been particularly useful in any neuralgia, including herpes zoster, headache associated with spasm anywhere in the body. Hyoscyamus was not used to force sleep in insomnia, as narcotic doses were required. Rather, it was used to allay irritability, which sleeplessness often follows, or to relieve restlessness and excessive dreaming during sleep. For this purpose, no herb was considered more efficient than Hyoscyamus having even been used in children's diseases for this purpose.

For similar purpose, Hyoscyamus was especially valuable to control the nervous phenomena following fevers and other exhausting diseases. Hyoscyamus was also used to calm nervous heart action, particularly with valvular insufficiency.

- Pulmonary Conditions: Hyoscyamus was used in spasmodic asthma and chronic cough, bronchitis with short, dry, explosive cough and as an important remedy in whooping-cough In pneumonia the Eclectics obtained prompt results from small doses. In particular, dry, irritative cough or nervous cough aggravated by lying down, were considered the indications for Hyoscyamus. As such , it was frequently given with Prunus in a syrup.
- Topical Applications: The fresh leaves were used as an a fomentation for external application to allay the inflammation and pain of ulcers and tumors, headache, and the pain in gouty, neuralgic or rheumatic affections.

Current Medicinal Use:

Hyoscyamus is often compared to Belladonna as both plants exert anticholinergics effects. However, Hyoscyamus is less likely than Belladonna to stimulate the central nervous system and more weakly exerts anticholinergic effects. Hyoscyamus is most often used for its antispasmodic effects on the digestive and urinary tracts. It is used in conditions involving spasm of these systems especially if there is associated pain, restlessness, and nervous agitation.

- Pulmonary Conditions: Hyoscyamus can also be smoked in order to reduce bronchial spasm. Hyoscyamus is also indicated in dry, nervous, irritable coughs.
- Gastrointestinal Conditions: Additionally, the sedative effects of hyoscine are useful in relieving motion sickness, ramps, spasm, diarrhea, and bloating. [1186]
- Genitourinary Conditions: Some herbalists describe Hyoscyamus as having a tropism for the genitourinary tract.
- Nervous Conditions: In small doses, Hyoscyamus may help to alleviate depression and in larger doses may help to relieve mania. Hyoscyamus is helpful in restoring rest in persons experiencing delirium from exhaustion, as in after a sickness. Hyoscyamus is used to treat Menierre's disease in Europe.

Pharmacy: Powder: 15-60 mg per day
1:10 tincture: 1 ml TID; weekly maximum = 15 ml

Drug Interactions: no information is currently available from the selected resources.

Contraindications: The solanaceous plants may be inappropriate in pregnancy, glaucoma, urinary retention, paralytic ileus, intestinal atony and obstruction, tachycardia, arrhythmia, and BPH.

Toxicity:

Acute toxicity presents with facial dryness, nausea, increased pulse rate, vertigo, dull headache, dilated pupils, muscular weakness, reduced peristalsis, tachycardia, paralysis, delirium and hallucinations, coma, spasms, cramps, convulsions, rapid pulse, salivation, death. King added giddiness, general excitation, fullness of pulse, flushing of the face, weight in the head, headache, somnolency, furious delirium, unconsciousness, coma, unresponsive pupils to light, cold sweat, small, frequent, and feeble pulse, and deep and labored respiration. Tetanic rigidity may be present a portion of the time and sometimes convulsions, as well as nausea, vomiting, and intestinal pain and purging. The treatment of poisoning by Hyoscyamus is that indicated under Belladonna.[1187]

Chronic toxicity symptoms include a macular rash which is dry and pruritic.[1188]

[1182] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

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[1184] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

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Hypericum perforatum

Hypericaceae

Common name: St. John's wort

Habitat: Hypericum is native to Europe and naturalized to N. America.

Botanical description: A 60 cm tall herbaceous plant. A yellowish-green hollow stem with two longitundinal opposite ridges bears translucently dotted leaves. The flowers are yellow with long stamens and lanceolate, sharply pointed sepals. The leaves have small perforations in the leaves compared to ornamental varieties which do not. (Hold it up to the light)

Parts used: Flowering tops

Identified Constituents:

- Anthracene derivatives (0.1-0.3%): favoring naphthadihydrodianthrones, in particular hypericin, pseudohypericin
- Flavonoids (2-4%): in particular hyperoside, quercitin, rutin, isoquercitrin, also biflavonolids, including, among others, amentoflavone
- Xanthones: 1,3,6,7-tetrahydroxy-xanthone
- Acylphloroglucinols: hyperforin with small quantities of adhhyperforin
- Volatile oil: chief components aliphatic hydrocarbons, including, among others, 2- methyloctane, undecane, furthermore dodecanol, mono- and sesquiterpenes: including, among others, alpha-pinene, caryophyllene, additionally also 2-methyl-3-but-3-en-2-ol
- Oligomeric procyanidines
- Catechin tannins (up to 10%)
- Caffeic acid derivatives: including, among others, chlorogenic acid

Pharmacology:

- Anti-depressant: The sedative action of the plant stems from hypericins, biflavones and hyperforin, although the mechanisms of action remain unclear.

The hypericins have monoamine oxidase (MAO) inhibiting actions in-vitro. This was thought up until recently to be the mechanism of action of the anti-depressant, sedative effects of St. John's wort. However, the hypericins are largely degraded in the digestive processes and plasma levels do not reach significant enough amounts to account for the anti-depressant effects.[1189]

New research suggests that St. John's wort extracts may exert their antidepressant actions by inhibiting the reuptake of the neurotransmitters serotonin, norepinephrine, and dopamine; this action is possibly due to the constituent hyperforin.[1190] However, the dose required for these effects to occur in humans is impossible to ingest.[1191]

Hypericum extract reduces cytokine expression (interleukin-6). There is a theoretical possibility that interleukins can induce depression in susceptible individuals.[1192]

Another proposed mechanism of action involves the binding of Hypericum extracts to GABA-a and GABA-b receptors. Hypericum extracts have high affinity for these receptors.[1193] GABA plasma levels are low in bipolar and unipolar depression and benzodiazepine, which enhance GABA-a activity, may be effective anti-depressants in addition to being anxiolytic.[1194]

- Anti-viral: Hypericin and pseudohypericin inhibit encapsulated viruses, including herpes simplex types 1 and 2, HIV-1, cytomegalovirus, para-influenza 3 virus, vesicular stomatitis virus and equine infectious anemia virus.[1195] The mechanism of Hypericum's anti-viral action is undetermined.
- Cardiotonic: The procyanidin fraction of Hypericum enhances coronary blood flow and antagonizes histamine and prostaglandin F-induced arterial contractions.[1196] These action lead to enhanced flow of blood and therefore nutrients to the myocardium.
- Hepatoprotection: A water/alcohol extraction of Hypericum increased bile duct flow in rats and reduced carbon tetrachloride-induced necrosis in barbiturate treated mice.[1197] Hypericum accelerates the metabolism of many drugs by inducing CYP450 enzymes.
- Melatonin increase: 90 drops of a commercial preparation of Hypericum [Hyperforat] significantly increased nocturnal melatonin after three weeks.[1198]
- Protein Kinase C Inhibition: Hypericin inhibits glioma cell line growth in-vitro due to inhibition of protein kinase C. The glioma inhibitory activity is equal to or greater than Tamoxifen.[1199] This action implies anti-viral and anti-neoplastic actions. In addition the inhibition of protein kinase C leads to inhibition of arachidonic acid and leukotriene B release which results in an anti-inflammatory action.[1200]
- Wound Healing: The volatile oil and flavonoids in Hypericum possess anti-microbial activity. Major anti-bacterial (especially Gm.

Positive) and minor anti-fungal actions have been observed in-vitro.[1201] Topical application of Hypericum extracts inhibit *Staphyloccus aureus* infection and speed the healing time for wounds, including burns.[1202]

Pharmacokinetics: Recent pharmacokinetic studies have been published using the 0.3% hypericin content standardized extract. The major drawbacks of these studies is the focus on hypericin and pseudohypericin. Nonetheless, these studies effectively demonstrated that hypericin and pseudohypericin are absorbed. In one of the studies, it was shown that after 4 days of taking the standard dosage of the extract (300mg t.i.d.), a steady state is reached with mean maximal plasma levels during the steady-state period of 8.5ng/ml for hypericin and
5.8ng/ml for pseudohypericin. [1203]

Medicinal actions: anti-inflammatory, astringent, vulnerary, sedative nervine, anti-depressant, antimicrobial, nervous trophorestorative, diuretic

Traditional Medicinal Use:
Specific Indications and Uses: Spinal injuries, shocks, or concussions; throbbing of the whole body without fever; spinal irritation, eliciting tenderness and burning pain upon slight pressure; spinal injuries, and lacerated and punctured wounds of the extremities, with excruciating pain; hysteria; locally to wounds, contusions, etc.[1204]

The Eclectics used Hypericum in diarrhea, dysentery, worms, jaundice, hemoptysis and other hemorrhages including menorrhagia, oliguria and in chronic urinary affections. In particular, Hypericum was applied to most cases involving the nervous system.

- Nervous Conditions: King noted that Hypericum has undoubted power over the nervous system, particularly the spinal cord. Homeopathic physicians have regarded it as the Arnica of the nervous system. It was used in injuries of the spine as well as lacerate or puncture wounds of the limbs to prevent tetanus and relieve pains. Hypericum was highly valued in spinal irritation with burning pain elicited from gentle pressure on the spinous processes. Throbbing of the whole body in nervous individuals, fever being absent, was also said to be a good indication for Hypericum. The Eclectic physicians also noted that Hypericum was an efficacious remedy for nervous affections with depression.
- Topical Applications: Externally, Hypericum was used in fomentation, ointment or oil for dispelling hard tumors, caked breasts, bruises, ecchymosis, swellings, ulcers, etc. Hypericum was also combined with an equal amount of Datura in an ointment for such conditions.

Current Medicinal use: Hypericum has been used throughout European history to treat sciatica, wounds and burns. Hypericum was thought to ward off evil spirits. These uses continue to be applicable with the refinement of current medical terminology.

- Behavioral and Psychological Conditions: Hypericum is used for mild to moderate depression, particularly in individuals feeling feelings of isolation, lack of community and separation from the rest of the world.

Hypericum has been tested in over 3,000 patients against placebo and various controls. A meta-analysis of 23 randomized trials of Hypericum with a total of 1,757 outpatients with mild to moderate depression reveals that Hypericum is significantly superior to placebo and comparably effective to standard antidepressants while producing fewer side effects.[1205] Of these studies comparing Hypericum with placebo, approximately 55% of patients receiving Hypericum improved, vs. 22% receiving placebo. In those studies comparing Hypericum with standard antidepressants, 64% of patients receiving Hypericum improved while 58% of patients receiving standard anti-depressants improved. The effects of St. John's wort may take anywhere from 2 to 8 weeks to manifest. The effects of long-term therapy with St. John's wort is unknown.

Extracts of St John's wort standardized for hypericin content (most studies used the 0.3% hypericin content extract) has significant support in the treatment of mild to moderate antidepression. The official German Commission E monograph for St John's wort lists psychovegetative disturbances, depressive states, fear, and nervous disturbances as clinical indications for St John's wort.

The clinical evaluation of St John's wort extract began with an initial clinical study of six depressed women, aged 55-65, which measured the change in urinary metabolites of noradrenaline and dopamine following administration of a standardized extract of St John's wort extract (0.14% hypericin content). Researchers found a significant increase in the catecholamine metabolite 3-methoxy-hydroxyphenylglycol, a marker commonly used to evaluate the efficacy of antidepressant therapy. A follow-up study by the same researchers followed 15 women with depression taking the same standardized extract. The results demonstrated a significant im-provement in symptoms of anxiety, apathy, hypersomnia and insomnia, anorexia, psychomotor retardation, depression, and feelings of worthlessness. No side-effects were observed.

Since this initial study, a total of 1,592 patients have been studied in more than 25 double-blind controlled studies.In these studies, St John's wort extract was shown to produce improvements in many psychological symptoms. St John's wort extract was able to achieve these benefits without producing significant side-effects. The currently available information clearly supports the short-term use of St

John's wort extract as an alternative to standard antidepressant drugs in cases of mild to moderate depression. Whether it will be shown to be suitable in the treatment of serious depressions (i.e. depressions associated with psychotic symptoms and/or depressions with serious risk of suicide) remains to answered. [1206, 1207, 1208]

The aim of a controlled, single-blind study was to evaluate if St John's wort could be beneficial in treating Seasonal efefctive disorder (SAD) patients and whether the combination with light therapy would be additionally advantageous. Patients who fulfilled DSM-III-R criteria for major depression with seasonal pattern were randomized in a 4 week treatment study with 900mg of St John's wort extract/day (0.3% hypericin content) combined with either bright (3000 lux, n = 10) or dim light (<300 lux therapy). The significant reduction in the Hamilton Depression scale in both groups (72 and 60%, respectively) indicates that St John's wort extract may offer support to patients with SAD as a sole therapeutic agent as well as in combination with light therapy. [1209,1210]

- Nervous Conditions: Hypericum may reduce a variety of other neurological conditions. Hypericum reduces anxiety, insomnia due to restlessness, irritability, neuralgia, neuroses, migraine headaches, fibrositis, dyspepsia and sciatica.[1211] Hypericum is useful for enuresis due to nervous anxiety or nerve irritation in the bladder, especially in children.[1212]

St John's wort has been shown to improve sleep quality and well-being in healthy elderly subjects. With antidepressant drugs, particularly tricyclic antidepressants and MAO inhibitors, REM (rapid eye movement) sleep is reduced. St John's wort did not interfere with REM sleep like other antidepressants and was shown to increase the intensity of deep sleep during the total sleeping period as demonstrated by brain wave studies. While St John's wort improved sleep quality it did not act as a sedative (i.e. it did not reduce sleep onset) nor did it change total sleep duration.[1213]

One of the most interesting comparative studies was a double-blind study where St John's wort extract (0.3% hypericin content) was compared with maprotyline in 24 healthy volunteers by measuring resting brain wave (EEG) tracings and mental activity (visual and acoustic evoked potentials). Interpretation of the differences in reactions indicated that, unlike maprotiline, which interferes with mental function, St John's wort actually improves memory and other mental activities. [1214]

- Musculoskeletal Conditions: Hypericum is also used as an analgesic for pain and inflammation. Acute inflammations associated with injury, trauma to the nerves and pain all respond to internal and topical use of Hypericum.
- Immune Conditions: The research suggests that St John's wort may be a useful adjunctive treatment for herpes simplex, mononucleosis, and influenza, although further human studies are needed to establish the optimal dosage of the standardized extract.

The greatest promise of St John's wort, however, may be in the treatment of AIDS. In response to the in vitro and animal studies, many AIDS patients began self-administering St John's wort. Although most patients reported feeling better with a more positive outlook, more energy, and less fatigue, it was not known to what degree this was due to a placebo effect. To better determine the benefits, a number of trials evaluated the efficacy of standardized extracts of St John's wort in the treatment of HIV-infected individuals.In one study, St John's wort extracts providing approximately 1 mg of hypericin/day were studied in 31 patients. Concomitant use of AZT and other treatments was permitted. The results of the study were encouraging. In the subgroup of 10 patients who took no AZT either before or during the study ("AZT virgins"; none had AIDS), the mean helper T-cell count increased 13% from baseline after 1 month on St John's wort and maintained this increase for 4 months. Although these increases were not statistically significant, in contrast, helper T-cell counts of the 10 patients using AZT throughout the study fell significantly after an initial mild rise. Side-effects were limited to reversible liver enzyme elevations in five patients with all levels returned to baseline after 1 month without St John's wort extract.

In another open pilot study, 18 HIV patients (three with the CDC II, eight with CDC III, four with CDC IV B and three with CDC IV C1 classification) were treated solely with standardized St John's wort extract (weekly intravenous injection and daily oral intake), providing a daily intake of 2mg of hypericin. The 16/18 patients with good compliance showed stable or even increasing counts of absolute helper T-cells over the 40 months of observation. Also the helper to suppressor T-cell ratio showed an improvement in the majority of these patients. Clinically, it was noteworthy that only two of these 16 patients encountered an opportunistic infection during the 40 months of observation. The other 14/16 patients remained clinically stable and active in work and life. This steady-state condition of HIV infection also correlated with stable values of hemoglobin, leukocytes and platelets. Furthermore, none of the otherwise known viral complications due to CMV, herpes or EBV was encountered in these 16 patients.

Despite these good preliminary results, the trials proved disappointing as significant blood levels of hypericin could not be achieved using the extract either orally or intravenously. Use of the standardized extract for the treatment of HIV infection has since been replaced by the use of intravenously administered synthetic hypericin. Preliminary studies are again producing some encouraging results with good safety, although photosensitivity may occur and long-term controlled evaluation is needed.[1215,1216]

- Topical Applications: Hypericum may be applied topically to an area of pain and inflammation such as over the area of topical burns (post radiation, sunburn), bruises, diaper rash, Herpes zoster or a painful tooth. Concomitant internal use will augment the effectiveness of Hypericum. Hypericum repeatedly applied to an area of injury that involved severing of a nerve may result in complete recovery of function to that tissue.

Pharmacy: Standardized extract: 300 to 900 mg daily of extract standardized to 0.3% hypericin
Infusion: 2-4 g / cup QD to TID (1 tsp. = 1.8 gm)

1:5 tincture: 1-4 ml TID
1:1 fluid extract, fresh plant

Drug interactions: (for more detailed information, please see Dr. Brinker's book)[1217]

- Anesthetics, general: May cause a hypotensive episode that is poorly responsive to resuscitation.
- Anticoagulant medications: Increases clearance of warfarin and phenprocoumon
- Cyclosporine: Concomitant use decreased plasma concentrations of cyclosporine in a heart transplant patient.
- Digoxin: Hypericum reduced peak concentrations after 10 days concomitant use.
- Ethinylestradiol, desogestrel, OCPs: Concomitant use induced breakthrough bleeding due to increased clearance of the synthetic hormones.
- Reserpine: antagonistic effects.
- SSRIs, MAOIs: Concomitant use has resulted in serotonin syndrome.
- Theophylline: Hypericum induces CYP1A2 which metabolizes theophylline resulting in increased clearance.
- Indinavir: Hypericum induces CYP3A4 in hepatocytes and has been shown to correlate with reduced levels of indinavir in a small, poorly controlled trial. However, other medications metabolized by CYP3A4, such as alprazolam, have not shown an interaction. None the less, Hypericum has been recommended not to be used with protease inhibitors and nonnucleoside reverse transcriptase inhibitors.

Other drugs that Hypericum should not be combined with include:
diltiazem, nifedipine, beta blockers, impipramine, amoxapine, amitriptyline, phenobarbital, phenytoin, cylcophosphsamide, tamoxifen, taxol, etoposide, rapamycin, tacrolimus, citralopram, fluvoxamine, naratriptan, rizatriptan, sumatriptan, zolmatriptan, opiods, meperidien, sympathomimetics, naloxone, prioxicam, tetracycline.

Contraindications: [1218]

- Pregnancy due to emmenagogue and abortifacient effects (empirical) and uterine stimulant activity (in vitro, animals).
- Psychotic symptoms, suicidal risk or endogenous depression (speculative)
- Surgery, elective, due to potential interactions with anesthetic drugs.
- Ultraviolet light exposure (speculative) due to possible photosensitivity if very high doses of hypericin are consumed, such as 3600 mg standardized extract in a single dose or 600 mg tid for 15 days.

Toxicity: Approximately 2.4% of patients report side effects which include: gastrointestinal irritations, allergic reactions, tiredness and restlessness.

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Hyssopus officinalis

Labiatae

Common name: Hyssop

Habitat: Hyssop is native to Europe and is now cultivated widely.

Botanical description: This is a perennial plant with the lower part of the stem woody and the upper part slender and wand-like branches. The plant grows to about 2 feet. The leaves are opposite, sessile, lance-linear, punctate. Flowers bloom in July and are blue-purple, in small clusters upon crowded spikes.

Parts used: Herba

Constituents:[1219]

- Volatile oil: pinocamphone, alpha- and beta-pinene, linalool, 1,8-cineole, limonene
- Terpenoids: marrubiin, olanolic acid, ursolic acid
- Flavonoids: glycosides of hesperidin and diosmetin in the volatile oil
- hyssopin glycoside, tannins, resin

Pharmacology: An in-vitro study of the essential oil of hyssop demonstrated a spasmolytic action, which was found to be due primarily to linalool. The spasmolytic action was shown to be non-specific. Linolool (45% of the essential oil of Hyssopus officinalis) acts on both receptor-stimulated and on ion-stimulated contractions.[1220] The terpenoid, marrubiin, is also found in Marrubium, and is an expectorant. The ursolic acid is antiinflammatory.

Although *in vitro* studies indicate the total alcohol extract of hyssop as well as its carbohydrates inhibit human immunodeficiency virus (HIV),[1221] hyssop has not been used as a treatment for HIV infection. It is unlikely to be used as such because of its low potency.

Medicinal actions: Stimulant, carminative, pectoral, sedative, tonic

Traditional Medicinal Use:

Hyssop was considered a diffusive aromatic, stimulating and relaxing, with mild tonic properties that sustains capillary circulation gently, and the nervous peripheries.[1222]

- Pulmonary Conditions: Hyssopus was principally used in sore throats, as a gargle, combined with sage and alum. It was also recommended in asthma, coughs, and other affections of the chest including soreness, as an expectorant.
- Topical Applications: The leaves were applied to bruises to speedily relieve the pain, and disperse every spot or mark from the parts affected.

Current Medicinal Use:

At present, no clinical trials have been reported supporting hyssop's use in any condition.

- Gastrointestinal Conditions: Hyssopus is an effective carminative.
- Pulmonary Conditions: Hyssop is vasodilatory to capillaries, thus sustaining blood flow to organs, i.e. the lungs. Due to the anti-spasmodic action of the volatile oil, Hyssop promotes expectoration, relieves asthmatic cough, and is reduces the inflammation associated with respiratory infections. Hyssop is well suited to infections with significant mucous accumulation, as it is a stimulating expectorant. Additionally, Hyssopus is diaphoretic.
- Topical Applications: Additionally, the volatile oils (particularly linalool) of Hyssop have strong anti-fungal activity. Hyssop may be used externally as an anti-fungal and to speed the healing of bruises.

Pharmacy: Its pleasant taste makes a hot infusion well tolerated and effective. It is often combined with Marrubium in an infusion.
Infusion: 1-2 tsp. herba/cup water; 1 cup TID
1:5 tincture 2-4 ml TID

Contraindications: Hyssop is contraindicated in pregnancy.[1223]

Toxicity: No information on toxicity is available in the selected resources.

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Inula helenium — Compositae / Asteraceae (Aster / Sunflower family)

Common name: Elecampagne, Scabwort, Elf Dock, Velvet Dock, Aunee, Pushkaramula (Sanskrit), Xuan Fu (Chinese).

Common Trade Name: None known.

Habitat: Indigenous to Europe & North Asia. Currently, naturalized over much of Eastern N. America.

Botanical description: A stout perennial herb which thrives in moist, sandy, mountainous areas. The stems are 3-5' high, downy above & branched. The leaves are large, ovate, w/ toothed margins, & velvety undersides. The upper leaves clasp the stem & the lower leaves are stalked. The flower heads are golden yellow, 3-4" in diameter, solitary & w/ narrow rays; blooming in July & August. The root is slightly grey, hard, horny, & cylindrical, & should be dug in the autumn of the second year. The root is usu split into longitudinal, oblique pieces having one or more roots. The whole plant is similar in appearance to horseradish.

Parts used: Root & Flowers.

Energetics: Pungent. Bitter. Heating. (-) Vata & Kapha. (+) Pitta. Affinity for all tissues, except reproductive. [1224] Tends to be slightly warming, drying & stimulating.[1225]

Constituents:

- Volatile oil (1-4%): Sesquiterpene Lactones (alantolactone, isoalatolactone, alantic acid, & azulene).
- Carbohydrate: Inulin (up to 45%).
- Mucilage (branches of uronic acid).
- Phytosterols.
- Resin.

Pharmacology:

Inulin derives its name from Inula helenium. Inulin is not metabolized by the body and is secreted unchanged.

The main component of the root is the carbohydrate inulin, which in autumn, can comprise as much as 45% of total root weight. Inulin is bitter & acrid in taste, w/ an odour that is reminiscent of camphor.[1226]

Volatile oils are thought to be the main active constituent group in Inula. Sesquiterpene lactones in Elecampagne are anti-inflammatory & antibiotic in action. Antifungal activity has also been demonstrated. Isolated alantolactone has been used to treat parasites (e.g., roundworm, threadworm, hookworm, whipworm).

Volatile oils are also spasmolytic. Research has shown them to be useful for inhibiting tracheal & ileal smooth muscle spasm. Out of 22 plants tested, the most potent spasmolytics were: angelica root, clove, thyme, elecampagne, & lemon balm.[1227]

Inulin & mucilage in elecampagne are thought responsible for this herb's anti-tussive & carminative actions.[1228]

Medicinal actions: Diaphoretic. Diuretic. Expectorant. Alterative. Tonic. Antiseptic. Anti-spasmodic. Carminative. Analgesic. Rejuvenative Lung Tonic.

Current & Traditional Medicinal Use:

Constitutionally, Elecampagne is indicated for general catarrhal conditions, such as chronic pulmonary affections that have sx of: cough, SOB, wheezing, a specific for whooping cough in children, diseases of the breast & malignant fevers, hepatic torpor, dyspepsia, & a feeling of stitches in the side caused by the spleen. Elecampagne is known for its abilities to strengthen, cleanse, & tone up pulmonary & gastric membranes, encouraging a more harmonious metabolism by assisting the pancrease w/ the large amount of natural inulin contained in the root. Elecampagne was highly valued in cases of incipient TB.[1229]

- **Gastrointestinal Conditions:** Bitter principles indicate its use in cases where digestive tonification is indicated, such as in atony of abdominal viscera, w/ engorgement & relaxation of the tissues.
- **Gynecologic Conditions**: Inula was considered to have a moderate influence in promoting menstruation; for which purpose it was suggested to be combined with Anthemis and Caulophyllum.[1230]
- **Pulmonary Conditions:** Inula is one of the most important lung tonics. It is used in any chronic lung condition acting as an expectorant; being a valuable rx in tx of chronic catarrhal, bronchial, & all pulmonary irritations, including TB. Elecampagne is indicated in cases characterized by cough of a teasing, persistent character, that is accompanied by substernal pain & profuse secretions; such as in 'la grippe' & other more severe forms of colds. Inula's warming & strengthening properties promote the discharge of viscid mucous. Elecampagne is anti-inflammatory, immuno-stimulatory & somewhat sedating overall. Inula aids

expectoration, esp. in persons who are weak from overwork, from disease, or from age. It is particularly indicated in cases of irritating bronchial coughs, especially in children or the elderly. Inula soothes inflamed tissue & stimulates expectoration.

- **Antibacterial:** The antiseptic properties of this plant are pronounced. The bitter principle, helenin, is strongly bacteriocidal, esp. to the Tubercle bacillus.
- **Immune Function**: Inulin is a strong activator of complement & thus enhances cell-mediated immunity.
- **Night Sweats:** As a diaphoretic, Inula helps to relieve night sweats.

Current Research Review

- **Ischemic Heart Disease:** Nine patients with ischemic heart disease were treated with 3 g root powder of Inula racemosa or nitroglycerin 90 minutes prior to testing. All nine subjects had improvement in ST-segment depression on ECG, with greater improvements seen after Inula treatment.[1231]

Pharmacy:

- Infusion: q g (1 tsp = 4 g); sig 1 cup TID-QID as an expectorant. [1232]

Inula is slow in action, hence its long-term use is indicated for chronic conditions.

Inulin is most soluble in alcohol.

As a diaphoretic & expectorant, take w/ ginger, pippali, cinnamon, & cardamom. As a tonic & rejuvenative, take w/ herbs like ashwagandha, comfrey root or marshmallow. It can be used externally as a paste for muscular pain. As along tonic – 0.5oz simmered in 1 pt. water for 20 min. & taken tid after meals, w/ honey.[1233]

Contraindications/Toxicity: It is not suitable for cases of any class where the lungs are irritated or dry as it increases the dryness, and gives a feeling of constriction.[1234] May cause contact dermatitis.[1235]

[1224] Frawley D, Lad V. *The Yoga of Herbs*. Lotus Press, Twin Lakes, Wisconsin, 1992:116

[1225] Tilgner S. *Herbal Medicine From the Heart of the Earth*. Wise Acres Press, Inc, Creswell, Oregon, 1999:60.

[1226] Hutchens AR. *Indian Herbalogy of North America.* Shambhala, Boston, Massachusetts, 1991:117.

[1227] Mills S, Bone K. *Principles & Practice of Phytotherapy.* Churchhill Livingstone, NY, NY, 2000:29.

[1228] Lininger et al. *Healthnotes: Clinical Essentials, Herb Monographs*. Prima Publishing, Rocklin, CA, 2001.

[1229] Hutchens, 117.

[1230] Cook

[1231] Tripathi SN, Upadhyaya BN, Gupka VK. Beneficial effect of Inula racemosa (Pushkarmoola) in angina pectoris: a preliminary report. *Ind J Physiol Pharmac* 1984;28:73-5.

[1232] *PDR for Herbal Medicines.* Medical Economics Company, Inc., Montvale, NJ, 1999:913.

[1233] Frawley, *117*

[1234] Cook

[1235] Brinker F. *Herb Contraindications and Drug Interactions.* Eclectic Medical Publications, Sandy, OR, 1998:69

Iris versicolor

Iridaceae

Common name: Blue flag iris

Habitat:[1236] Indigenous to southern Europe

Botanical Description:[1237]

- Flower and Fruit: The flowers are long-pedicled and perfumed. The tepals are white or slightly blue. The outer ones are darker with a yellow beard. The anthers are as big as the filaments. The upper lip of the stigma branch is inclined forward. The fruit is a large capsule with a number of sections in which the brown seeds are lined up like rolls or coins.
- Leaves, Stem, and Root: The plants are perennial 30-100 cm high. The rhizome is thick and short. The strong flower-bearing stem is branched from the middle. The leaves are broad, sword shaped, usually curved and gray-green.

Energetics: cooling and drying.[1238]

Parts used: Rhizome, collected in the fall

Constituents:[1239]

- Volatile oil: furfural
- Iridin glycoside
- Acids (salicylic and isophthalic)
- Misc: monocyclicC31 triterpenoid, gum, resin, sterols

Pharmacology:

Medicinal actions: alterative, anti-inflammatory, cathartic, diuretic, stimulant, anti-obesity agent,[1240] emetic, cholagogue, sialagogue, anthelimtic, diuretic,[1241] lymphagogue,[1242] choleretic, pancreatic bitter.

Traditional Medicinal Use:

- Even at the time of the Eclectics and Physiomedicalists, Iris was recognized to act upon the gastrointestinal, glandular and nervous systems. In particular, Iris was noted to exert a powerful catalytic action upon the lymphatic glandular system, the ductless glands, liver, pancreas, and kidneys. The Eclectics used Iris as directly stimulant to waste and excretion, to influence the lymphatic system, in cachectic states, imperfect nutrition and particularly in the treatment of secondary syphilis.[1243] Such applications demonstrated its use as an alterative and cholagogue.
- The specific indications for iris may be stated as impaired general health, with mental depression, and when the skin presents abnormal pigmentation; fullness of thyroid gland; enlarged spleen; chronic hepatic complaints, with sharp, cutting pain, aggravated by motion; nausea and vomiting of sour liquids, or regurgitation of food, especially after eating rich pastry or fats; watery, burning bowel discharges; enlarged lymphatics, soft and yielding; rough, greasy conditions of the skin; disorders of sebaceous follicles; abnormal dermal pigmentation; menstrual wrongs, with thyroid fullness; unilateral facial neuralgia; muscular atrophy and other wasting of the tissues; bad blood. [1244]
- Dermatological Conditions: King believed that Iris seemed to have a better action in chronic conditions and was particularly adapted to diseases involving the sebaceous gland. The Eclectics indicated Iris for rough, greasy, discolored conditions of the skin, and in those cases where pustular eruption seems to be associated with functional disturbances of the reproductive system such as when associated with thyroid fullness in the female. The Eclectics have used Iris beneficially in eczema rubrum of children, and in cases of eczema of the scalp in adults.
- Endocrine Conditions: The Physiomedicalists recognized that Iris has a bearing toward the glandular system and the Eclectics specifically indicated Iris in soft glandular enlargements. Scudder noted that Iris exerted a specific influence in cases of enlargement of the thyroid gland, having effected cures in very severe cases.[1245] King described Iris as a reliable herb for the treatment of goiter, whether the enlargement is constant or simply fullness due to menstrual irregularities. Basedow's disease (exophthalmic goiter) in the early stage, has been cured by Iris. Addison's disease has been greatly improved, though not cured by it.[1246]
- Gastrointestinal Conditions: The Eclectic and Physiomedicalists noted that Iris aroused the secretion of saliva, bile and other (exocrine) glandular secretions. It was rarely used alone as a cathartic, being too active for ordinary purposes.
  King noted that Iris powerfully excites the biliary, salivary, and pancreatic secretions and it influences every part of the system in small doses, and repeated at short intervals. It seems to act more particularly on the glandular system, exciting them to a

discharge of their respective offices. King applied Iris, in small doses, for gastric irritation with associated vomiting and in gastralgia, being valuable in cholera infantum and cholera morbus. He also recorded good results in burning aphthous states of the oral cavity. King observed that muscular mucosa of the viscera, such as reflex muscular pains dependent on gastrointestinal and pancreatic disorders, were relieved by it. Duodenal catarrh, with jaundice, and clay-colored stools, indicating a lack of biliary secretion, was cured by Iris. Iris was likewise considered valuable in constipation, dependent upon biliary and intestinal torpor. In chronic affections of the pancreas, with a sodden, leaden-colored tongue, and in chronic splenic disease, when the skin is blanched, as in leucocythemia, Iris was indicated. An interesting use of Iris was for distressing sensations beneath the scapula, symptoms that are now associated with pancreatic or biliary conditions. For biliousness, King noted its effect was prompt and efficient as a remedy for bilious headache, accompanied by nausea and vomiting, or in sick headache, dependent upon indigestion. In chronic hepatitis, and other hepatic disorders, with constipation, and sharp, cutting pains, increased by motion, Iris was given alone or combined with other hepatics. It was also considered very efficient in malarial jaundice, intermittent and bilious remittent fevers. [1247,1248]

- Genitourinary Conditions: Combined with diuretics or used alone, Cook noted that Iris had a distinct affect on the kidneys. [1249] King indicated the use of Iris in chronic renal diseases, edema, ascites, anasarca, hydrothorax, and hydropericardium. King used Iris successfully for gonorrhea, spermatorrhea, and prostatorrhoea. Specific iris was found very useful in those prostatic discharges and nocturnal emissions, the result of masturbation, and which are accompanied with considerable debility, mental uneasiness, and more or less irritation of the nervous centers. [1250]
- Gynecologic Conditions: King noted that Iris has a markedly positive influence on the ovarian and uterine disturbances giving rise to fullness. As a remedy for uterine hypertrophy, enlarged ovaries, ulcerated os and cervix uteri, uterine leucorrhoea, and dysmenorrhea the specific tincture was used.

Current Medicinal Use:

- Skin conditions: Works through the liver, helps in detoxification. Used for eczema, spots and blemishes. For more chronic eczema and psoriasis, used as part of a wider treatment.[1251]
- Gastrointestinal conditions: Iris is included in the digestive section because of its stimulating effects on the liver, gallbladder, pancreas, and colon. Iris promotes the production and secretion of bile along with other hepatic functions making it useful in toxic conditions (i.e. eczema, psoriasis). Iris stimulates glandular functions in general, including the pancreas. Iris is an excellent herb to use in pancreatic insufficiency associated with toxicity [i.e. excessive intestinal permeability with resultant eczema]. Given the dual function of pancreatic and liver stimulation, Iris is especially indicated in fat maldigestion. Due to its stimulating effect on bile secretion, Iris acts as an aperient.[1252] Iris is also useful in constipation associated with liver problems or biliousness.[1253]
- Endocrine Conditions: Iris is helpful in other glandular disorders including hypothyroidism (with thyroid enlargement), splenomegaly, lymphadenopathy, menstrual irregularities (including uterine fibroids), sebaceous gland disorders (i.e. boils, acne). In summary, Iris can be thought of as a glandular alterative. [1254]

Pharmacy:

- Dose: If a pronounced action upon the gastro-intestinal and glandularsecretions is desired, from 5 to 20 grains of the powder, or 10 to 60 minims of the strong tincture, or 5 to 20 drops of specific iris may be used. For its specific uses, however, the specific iris, in doses of from 1/20 to 5 drops, is preferred.[1255]
- Powdered root:
  - 1 g.[1256]
  - 2-20 g – liver stimulant; 3-15 grains – for lymphatic and splenic congestion or fullness.[1257]
  - 20 grains – cathartic. [1258]
  - 2-5 grains, sig. TID as a glandular stimulant.[1259]
- Liquid extract:
  - Unspecified strength: 2-4 ml,[1260] 5 gtts.[1261]
  - 1:2 fresh strength liquid extract: 1-5 gtts QD-TID in little water.[1262]
- Tincture:
  - Unspecified strength: 4-12 ml,[1263] 10-25 gtts TID – liver stimulant, 1-20 gtts – for lymphatic and splenic congestion or fullness,[1264] 2-4 ml TID.[1265]
  - 1:5 25% EtOH tincture; sig 1-5 ml TID; max. dose 100 ml/week.[1266]
  - Fresh root, 3oz.; 80% alcohol, 1 pint. Macerate for 2 weeks. Sig 10-20 gtts TID.[1267]
- Decoction:
  - 1 tsp/ cup water; sig 1 cup TID.[1268]

- ½-1 tsp of dried herb/cup water, bring to boil, simmer 10-15 min. Sig: 1 cup TID.[1269]

- External applications:
  - Poultice or ointment.[1270]
  - Dr. Fox's skin cancer liniment - tincture: Iris: red clover: sanguinaria = 2oz : 1oz : 1oz. Sig: apply externally to the affected area and cover with plastic to retain moisture.[1271]

Contraindications:

- Pregnancy.[1272]

Toxicity/Side Effects:

- Fresh root may cause dermatitis. Toxic doses cause burning sensation in the mouth and throat, N/V, violent diarrhea, abdominal burning, gastroenteritis resulting in death.[1273]

[1236] *PDR for Herbal Medicines*, 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p. 563.
[1237] Ibid, p. 563
[1238] Sharol Tilgner, *Herbal Medicine From the Heart of the Earth*, Wise Acres Press, Inc., Creswell, OR, 1999, p. 77
[1239] R.C. Wren, *Potter's Encyclopaedia of Botanical Drugs and Preparations,* C. W. Daniel Company Limited, Saffron Walden, England, 1985, p. 39
[1240] Wren, p. 39.
[1241] W. Mitchell, *Naturopathic Applications of the Botanical Remedies*, 2nd ed., 1983, p. 52
[1242] Tilgner, p. 77
[1243] John M. Scudder, *Specific Medication and Specific Medicines*, 15th ed., Eclectic Medical Publications, Sandy, OR, 1903.
[1244] Harvey Wickes Felter and John Uri Lloyd, *King's American Dispensatory,* 18th ed., 3rd revision, Eclectic Medical Publications, Portland, 1983.
[1245] Scudder.
[1246] Felter
[1247] Felter
[1248] WM., H., Cook, *Physiomedical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*, Eclectic Medical Publications, Portland, 1985, pp. 485-7
[1249] Ibid
[1250] Felter.
[1251] David Hoffman, *The New Holistic Herbal: A Herbal Celebrating the Wholeness of Life*, 3rd ed., Element, Shaftesbury, Dorset, 1990, p. 183.
[1252] Bastyr University monograph used earlier
[1253] Hoffman, p. 183
[1254] Bastyr University monograph used earlier
[1255] Felter .
[1256] Wren, p. 39.
[1257] Mitchell, p. 52, 70
[1258] Mitchell, p. 52
[1259] Cook, pp. 485-7
[1260] Wren, p. 39.
[1261] Mitchell, p. 70.
[1262] Tilgner, p. 77
[1263] Wren, p. 39.
[1264] Mitchell, p. 52, 70
[1265] Hoffman, p. 183
[1266] Dr. Alschuler
[1267] Cook, pp. 485-7.
[1268] Dr. Alschuler
[1269] Hoffman, p. 183
[1270] Wren, p. 39.
[1271] Mitchell, p. 60
[1272] Tilgner, p. 77
[1273] Tilgner, p. 77

Juglans nigra / J. cinerea/ J. regia

Juglandaceae

Common name: Black Walnut (J. nigra), Butternut (J. cinerea), Walnut Fruit Shell (J. regia) (Walnut Family)

Habitat: Native to the Middle East, cultivated world-wide

Botanical description: A large tree with strong, spreading boughs. Leaves are composed of 7-9 green leaflets, which are 5-10 cm in length & 3-4 cm wide. Leaves have a *characteristic odor*, which is gradually lost as the leaves turn brown. The bark is dull, blackish-brown, tough & fibrous. The taste is bitter & astringent.

Parts used: Leaves, Inner Bark of root & trunk, Unripe Nuts.

Constituents:
Leaves: naphthaquinones (juglone), volatile oil, fatty acids, tannins (44.8%), ellagic acid, gallic acids, flavonoids, inositol.
Juglandin (J. cinerea) – main constituent, cathartic action.[1274]

Pharmacology: of Napthaquinones

Medicinal actions: alterative, laxative, antiseptic, Aperient, Sudorific / Diaphoretic

Traditional Medicinal use:
Dermatological Conditions: J. nigra can be used for various skin eruptions (ie. acne, eczema, herpes, ulcerations, urticaria), esp. in the tx of chronic skin conditions which are assoc. w/ problems of digestion & assimilation. J. cinerea is used for pustular & eczematous skin conditions, including topical applications for ringworm (Tinea corporis). Both Black Walnut & Butternut are indicated in skin conditions assoc. w/ abnormal GI function.[1275] In general, alteratives are indicated in skin diseases that are assoc. w/ toxemia or septicemia. Traditionally, alteratives are indicated in the tx of joint dz, CT dz, & in detoxification formulas. [1276]
GI Conditions: J. cinerea is a cathartic that is moderately slow, but reliable in action. Its relaxing & stimulating qualities increase GI tone by influencing: the gall bladder, assoc. ducts, & the mucous membranes & musculature of the bowels.[1277] When constipation is a result of deficient GB secretions, butternut can be used as an aperient.[1278] Symptoms of patients w/ GB congestion, include: anorexia w/ a coated tongue, constipation, HA, dizziness, pasty complexion, & slight jaundice (rare). [1279]
J. cinerea is helpful in cases of chronic and sub-acute diarrhea that is secondary to hepatic congestion accompanied by dense hemorrhoids.[1280] Like Iris versicolor, butternut can also evacuate the bowels with little griping while stimulating GI glandular secretions.[1281] The fixed oil is effective in expelling worms, including *tapeworms*.
Hepatobiliary Conditions: J. cinerea clears hepatic congestion & stimulates GB secretions. It is a tonifying purgative during all forms of jaundice, where biliousness & chronic constipation are the result of the deficient release of bile. In some circles, J. cinerea is thought to purge the hepatic tubes of all viscid accumulations, instead of acting entirely through the stimulation of GB secretions. [1282]

Current Medicinal Use:
GI Conditions: The dried & powdered bark is used as a powerful purgative. The unripe nuts themselves are anthelmintic in action; while the husk, shell & peel from the unripe nuts induce perspiration. J. cinerea & J. nigra have very similar medicinal effects. In small doses, J. cinerea acts as a mild intestinal stimulant & aperient; at larger doses, it is emetic & cathartic. Thus, J. cinerea can be used daily as a mild laxative in the tx of constipation. Butternut will not cause rebound constipation that can result from wheaning off of some of the stronger anthraquinone glycoside containing botanicals, such as Cassia or Rhamnus spp. This gentle laxative effect is particularly indicated in constipation-predominant IBS.[8] It is also indicated in cases of: chronic constipation, GERD assoc. sx, & eczema. Juglans spp are thought to stimulate both GB & intestinal secretions (esp. glandular secretions & water).

Current Research Review:
- Search of Medline revealed no clinical trials as of October 2002.

Pharmacy: Long-term therapy with alteratives is often appropriate and is usually safe. Laxative herbs, however, are best reserved for conditions of necessity. However, Brinker cites caution with prolonged use of J. nigra due to mutagenic properties of juglone as shown in animals.

Powdered leaf:	2-6 g (Alschuler)
Fluid extract:	2- 6 ml (Alschuler)
1:5 tincture	1-2 ml (Alschuler)

Contraindications: Alteratives can be provocative to a skin condition. Care and judicious use is necessary to reduce the likelihood of a major exacerbation. (Mills and Bone)

According to Cook, J. cinerea can cause sharp griping in sensitive people and those with a nervous temperament. This effect is more common with use of bark material that has not dried long enough. He further states that it is not a suitable agent for any form of intestinal sensitiveness or irritation. It often colors the feces nearly black as well.

Finally, stimulant laxatives such as J. spp. can potentiate cardiotonic medications.[1283] See Geranium monograph for further contraindications of tannin rich herbs.

Toxicity: N/V and watery catharsis. (Alschuler) External application of the fresh may cause contact dermatitis (treat by washing area with soap and water).[1284]

[1274] Hutchens, Alma R. *Indian Herbalogy of North America.* Shambhala. Boston. 1991. p.64.

[1275] Ellingwood p. 329

[1276] Mills S, Bone K. *Principles and Practice of Phytotherapy: Modern Herbal Medicine.* Churchill Livingstone, 2000. p. 148, 179, 180, 254

[1277] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy…* Eclectic Medical Publications, Sandy, OR 1985 p. 488-91

[1278] Ellingwood, F. *American Materia Medica, Therapeutic and Pharmacognosy*. Ellingwood's Therapeutist, Chicago. 1919 p. 328

[1279] Stedman

[1280] Cook p. 488-91

[1281] Ellingwood, p. 328

[1282] Cook p. 488-91

[1283] Brinker p. 161

[1284] Dr. Alschuler, Brinker p. 149

Juniperus communis

Cupressaceae

Common name: juniper

Habitat: Widely distributed throughout the N. hemisphere growing on moors, heaths and scrublands in the plains and mountains.

Botanical description: A small shrub that grows 4-6 feet high. The berry is 0.5-1cm diameter, purplish-black with three furrows joined at the apex.

Parts used: Berries (actually, they are fleshy cone scales, similar to yew)

Active Constituents: Volatile oil (~1%), condensed tannins, diterpene acids, sugars, resin, vit. C

Medicinal actions: Stimulating diuretic, antiseptic, carminative, anti-inflammatory, bitter, antidyscratic diuretic

Medicinal use:

- Genitourinary Condtions: The volatile oils in Juniper irritate the kidneys, thereby causing diuresis. Juniper is a good addition to a urinary tonic formula as it tonifies through stimulation. Otherwise, Juniper is an antiseptic in cystitis. Juniper is most indicated in atonic, chronic congestive states of the urinary system. Juniper is well-indicated in renal insufficiency as long as inflammation is not present. Juniper is also well-indicated after nephritis to restore normal kidney functioning.
  Dr. Christopher (an herbalist of the early-mid 1900's) recommended a spring cleanse which consisted of eating one juniper berry the first day, adding an additional juniper berry each day until a total of 10 berries is consumed and then decreasing back down in the same manner to zero.
- Musculoskeletal Conditions: Juniper is also used in arthritis and rheumatism because of its anti-inflammatory and diuretic properties. Juniper can be applied externally as an analgesic for painful joints, sprains and bruises. The spirit is rubbed in after warming the joint with a bath, heat lamp or even a hair dryer.
- Gastrointestinal Conditions: The volatile oils also create a carminative effect and antiseptic effect. The volatile oils along with the tannins exert anti-inflammatory actions, especially in the G.I. system. The anti-inflammatory and carminative actions combine with a bitter action, making Juniper a useful digestive aid.

According to Weiss:[1285]

- Genitourinary Condtions: Chronic urinary conditions call for Juniper.
- Musculoskeletal Conditions: The main indications for Juniper is chronic arthritis and chronic gout as well as neuromuscular rheumatic diseases, in general, including tendopathies and myogeloses (abnormal hardening of a portion of muscle). External application of Juniper spirit has been used for rheumatism and neuralgic pain having a mild hyperemic effect.
- PulmonaryConditions: Concentrated Juniper juice may be used as a tonic for children, particularly if they are prone to sore throats and colds. This effect is likely due to the bitter component.
  Juniper has an expectorant property which has been ascribed to the volatile oil.
- Dermatological Conditions: Juniper tar can be used topically to treat dermatitis and eczema. The tar has a mild disinfectant activity and is generally a well tolerated topical application. Tars in general should be used cautiously starting with a concentration of 0.25%, gradually increasing to 0.5%, then to 1%. Concentrations up to 5-10% or pure tar may be used if tolerated. They are painted on dry or in a zinc paste.

According to Scudder:[1286] (Scudder refers to Juniperus sabina)

- Gynecological Conditions: Juniper is a stimulant. It may be employed in menorrhagia, and in atonic leucorrhoea, with advantage. In some cases of amonorrhoea it may be. employed as a stimulant, but never in those cases presenting excitement of the circulation.
- Genitourinary Condtions: It may also be used as a stimulant in vesical catarrh, and in diseases of the urethra.

According to Ellingwood:[1287]

- Genitourinary Condtions: Juniper is a renal sedative and corrective reserved for use in chronic conditions. It is indicated in feeble or aged patients with persistent dragging or weight across the kidneys. Although used after acute nephritis, it may be employed in the prevention of nephritis. After acute inflammation, it will restore the secretory power of the epithelium of the renal tubules and readjust the secretory function to the blood pressure.
- Dermatological Conditions: The oil is applicable to skin diseases, especially wet eczema. It may be applied directly but can be irritating. It is also useful in psoriasis and topical parasites.

Pharmacy: Weiss warns against longterm use of Juniper limiting use to six weeks in succession while Brinker suggests limiting use to four weeks in succession.
Infusion (boiling will cause the volatile oils to be lost): 1 tsp. lightly crushed berries/cup water; infuse 20 min; 1 cup BID
Tincture 1:5 45% EtOH 0.5 - 1 ml TID
Essential oil: 5 parts to 30 parts fixed oil, sig 30 gtt tid
Juniper concentrate (Succus Juniperi Inspissatus): 5ml bid
Juniper Syrup: for rheumatic conditions: up to 15 ml bid, taken in spring and autumn (This may be availble through Vogel products)
Juniper tar

Contraindications: Contraindicated in acute kidney infections or kidney disease (nephritits and nephrosis) and pregnancy due to the stimulation of uterine contractions.[1288] Weiss indicates the risk of inducing abortion is not great yet recommends avoiding any form during pregnancy.[1289]

Toxicity: A key sign that long term use may be irritating the kidneys is albuminuria.

[1285] Weiss, R.F. Herbal Medicine. Verlag GmbH, Stuttgart, 1996. p. 235-6, 260

[1286] Scudder , JM. Specific Medication and Specific Medicines, 15th ed. Eclectic Medical Publications, Sandy, OR, 1903

[1287] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 441

[1288] Brinker, F. Herb Contraindications and Drug Interactions, 2nd ed. Eclectic Medical Publications, Sandy Oregon 1998 p. 87-8

[1289] Weiss, R.F. Herbal Medicine. Verlag GmbH, Stuttgart, 1996. p. 235-6

Larrea tridentata — Zygophyllacea

Common name: Chaparral, Creosote bush, Cresotum

Habitat: This plant grows throughout the southwest deserts at altitudes below 4,000 feet.

Botanical description: This is a bush that can grow up to 12 feet tall but is usually 5 to 6 feet tall. It has many branches that produce many leaves. The small and curled leaf is dark yellow-green and has a greasy texture in moist conditions. In drought the leaf turns olive colored and in extreme drought become brown in color. The stems are also yellow-green in order to do photosynthesis. The larger branches and trunks are reddish-brown to black. The small flowers are yellow. The plant blooms after a rain any time of the year and mature into fuzzy round capsules.

Parts used: Leaves, flowers, seeds, small twigs

Constituents: Flavone- and flavonol aglycones (18 different ones); Dihydroflavonol; Larreic acid; Guaiuretic acid lignans including nordihydroguaiaretic acid (NDGA) [1%-1.5% of dry plant]; Quercetin bioflavonoids

Pharmacology:

The major lignan in chaparral, known as nordihydroguaiaretic acid (NDGA). The anti-oxidant action of chaparral is attributed to NDGA. NDGA is within the resin of Chaparral and has both anti-inflammatory and anti-oxidant effects. NDGA decreases prostaglandin and thromboxane synthesis by inhibiting cyclooxygenase.[1290] NDGA also inhibits lipoxygenase thus reducing leukotriene synthesis.[1291]

NDGA also decreases histamine and slow-reacting substance of anaphylaxis (SRSA) from lung tissue in addition to inhibiting the contractile response within lung parenchyma.[1292] In addition, Larrea extracts possess anti-lipid peroxidation properties. The anti-oxidant properties of Larrea will prevent oil rancidity. In addition, Larrea will protect hepatocytes against lipid peroxidation. Chaparral also contains antioxidant flavonoids and has demonstrated anti-amebic activity *in vitro*. The potential of chaparral for cancer treatment has not been proven in human studies.[1293]

Medicinal actions: Antimicrobial, hepatic stimulant, hypolipidemic, anti-hepatotoxic, anti-peroxidant, anti-rheumatic

Traditional Medicinal Use: No information is available from the selected resources.

Medicinal use: All of the pharmaceutical actions contribute to the overall anti-inflammatory, anti-hepatotoxic and anti-allergic effects of Larrea. These effects are useful in conditions such as arthritis, autoimmune disease, atherosclerosis, and hormonal dysregulation.

- Hepatobiliary Conditions: Chaparral is a hepatic stimulant. It will enhance the absorption of dietary fats via its choleretic action. Chaparral will also lower LDL and VLDL levels. The hepatic stimulation combined with the antioxidant actions of Chaparral make it useful in various arthralgias including osteo- and rheumatoid arthritis.
- Immune Conditions: Chaparral is used by some practitioners as an anti-cancer therapy. The proposed mechanism of action is based upon the inhibition of anaerobic respiration (primary respiratory pathway of cancerous cells) by inhibiting mitochrondrial NADH oxidase and succinoxidase and folic acid dehydrogenase. However, in-vivo studies have not shown significant cancer regression. This may be because low concentrations of NDGA stimulate cellular respiration. Nonetheless, the antioxidant properties of chaparral prevent carcinogenic oxidants from initiating cancerous cellular changes and NDGA blocks chromosome damage caused by tumor promoters. Thus, chaparral may be most useful in the prevention of cancer, particularly melanoma cancer (high sensitivity to the anti-carcinogenic and anti-neoplastic effects of chaparral).
- Infectious Conditions: The actions of Chaparral stem from its ability to inhibit aerobic glycolysis in the mitochondrial of its own cells. The oils leeched out into the surrounding soils inhibit seeds from burning up their sugars thus the seeds cannot sprout until rains wash away the oils.[1294] This same action is responsible for the antimicrobial properties of this plant. Chaparral is bacteriostatic and bacteriocidal most likely secondary to its inhibition of aerobic glycolysis. It is useful in the treatment of gastroenteritis, vaginitis, impetigo, folliculitis and various dermatophytic infections. It must be taken or applied frequently to produce results, but rarely fails to reduce or eliminate the infection.

Current Research Review

- **Safety:**[1295]
  - Design: Retrospective clinical trial
  - Patients: Thirty six patients:

- Therapy: Thirteen patients – Larrea tincture po; twenty three patients – Larrea extract in Ricinus communis oil topically.
- Results: No patient in the study, whether using Larrea for short term or long, internally or externally, showed any sign of organ damage during the period of follow-up. Relatively small intakes of Larrea tincture, or topical application of extracts in Ricinus oil, are safe when prescribed by a clinically trained botanical prescriber. Larrea should be used with caution in persons with a history of previous, or current, liver disease. It may be preferable to avoid the use of Larrea capsules because they have been associated with potentially dangerous overdosing.

Pharmacy: 1:5 tincture 75% EtOH: 1/4 - 1/2 tsp. BID to QID
Capsules (00): 1-2 capsules BID - TID
Note: Larrea tridentata is very bitter!

Drug Interactions: No information is currently available. However, based on the contraindications below regarding COMT, use of Larrea may potentiate the effects of COMT and MAO inhibiting medications.

Contraindications: Brinker contraindicates the use of Larrea in patients with a history of liver disease based on reports of possible hepatotoxic effects. He also contraindicates its use in renal disease (human reports, animal studies) and during nursing. NDGA may also inhibit COMT causing an increase in plasma catecholamines (in vitro).

Toxicity: Avoid long-term use due to the presence of alkaloids. A 1-2 month vacation every 2-3 months is advisable to avoid any long-term toxicity.

[1290] Armour CC, et al, *Eur J Pharm*, 55, 1987:49.

[1291] Armour CC, et al, *Eur J Pharm*, 55, 1987:49.

[1292] Nakadate, T, et al, *Jap J Pharm*, 38, 1985:161.

[1293] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[1294] Moore, Michael, Medicinal Plants of the Desert and Canyon West, Sante Fe, NM: Museum of New Mexico Press, 1989:28.

[1295] Heron S, Yarnell E. The safety of low-dose Larrea tridentate (DC) Coville (creosote bush or chaparral): a retrospective clinical study. *J Altern Complement Med* 2001;7(2):175-85.

Lavendula officinalis (L. angustifolia) **Lamiaceae**

Common name: lavender

Habitat:

Botanical description:

Part used:

Historical use:

Energetics:

Constituents: volatile oil: alcohols, esters

In Lavendula grown in lower altitude, the alcohols are pushed more and they will be more anti-inflammatory and tonic. High altitude grown Lavendula has more esters which are antispasmodic and calmative.

Pharmacology:

Medical actions: calmative, antimicrobial (antifungal, antibacterial), vulnerary

In comparison with sedatives, calmatives do not put you to sleep or induce drowsiness whereas sedatives do.

Medical uses:

nervousness, anxiety, restlessness, depression, melancholy

insect repellant

Can be used topically for tineas, although exercise caution with tinea cruris by making a weaker formula.. Impetigo,Headaches

vulnerary: burns and wounds

myalgia, arthralgia neuralgia

Pharmacy: Topical application: 5-10 gtt in 15 ml of fixed oil.
1-2 gtt essential oil for mouth and throat conditions.
Otitis externa: gtts on cotton ball inserted in ear.
Candida vaginitis: 2-3 gtt in 2 T fixed oil soaked into a tampon

Toxicity:

Leonurus cardiaca

Labiatae

Common name: Motherwort

In east Asia, Leonurus sibiricus is widely used as a medicinal plant on the same indications as L. cardiaca. L. heterophyllus is used in Chinese herbal medicine (whole plant: Yi mu cao; seed: Chong wei zi).

Habitat: The plant is commonly found in waste places near human habitation, along streets and fences

Botanical description: The plant has perennial roots with annual herbaceous stems, which are stiff and hairy. The leaves are irregularly palmate deeply toothed, with 5-7 lobes. The floral leaves are narrow 3-5 lobed and often entire. Flowers are small forming close whorls and long spikes. The calyx is 5-toothed, corolla is pink, tubed with a hairy upper lip and a 3-lobed lower lip. The fruit is a nut with a flat angular top.

Part used: Herba (leaves are best)

Energetics:

Yi mu cao (L. heterophyllus): It is bitter, acid and slightly cold. It enters the liver and pericardium meridians. An interesting observation is that these two meridians are involved with the menstrual function and the heart, respectively.

-invigorates blood, regulates menses
-reduces masses
-promotes urination
-reduces swelling
-tonifies blood to move blood[1296]

Active Constituents: Bitter glycoside (leonurin), tannins, alkaloids (leonurine and stachydrine), glycosides, v. oil, vits. A and C, iridoids.

Pharmacology:

Medicinal actions: Cardiac tonic, sedative, nervine, antispasmodic, mild uterine stimulant and tonic, emmenagogue.

L. heterophyllus: uterine relaxant, spasmolytic, estrogenic, hemostatic, emmenogogue, thyroid inhibitor, coronary and renal restorative[1297]

Medicinal use:

Leonurus is most indicated in nervous debility with irritation and unrest. Leonurus is diffusive in its action. It generally exerts a relaxing effect with a slight stimulating edge.

- Gynecologic Conditions: The alkaloids increase uterine contractions, while the glycosides are antiseptic, nervine, anti-spasmodic, and hypotensive. The hypotensive action is due to its vasodilatory effect, which also serves to increase circulation to the reproductive organs. Leonurus is most indicated in women who feel anxious, restless, have pelvic and lumbar discomfort, and experience general weakness. Leonurus relieves stagnation in the pelvis, esp. suppressed discharges. It is specific for women with headache, insomnia, vertigo, pelvic complaints, anxiety attacks and high stress. Finally, Leonurus is a galactagogue
- Cardiovascular Conditions: Leonurus, as a gentle cardiotonic, is specific for cardiac disorders of nervous origin (i.e. tachycardia secondary to anxiety). This remedy is especially good for pregnant women with fear, palpitations, or SOB.
- Endocrine Conditions: Leonurus is also useful in hyperthyroidism (especially in combination with Lycopus and Melissa).

According to Mills and Bone:[1298]

- Cardiovascular Conditions: Leonurus is indicated for the combination of benign arrhythmias or ectopic beats with thoracic tension.
- Musculoskeletal Conditions: Leonurus can be used in formulas for tension headache and migraine.
- Nervous Conditions: Leonurus is an antispasmodic and relaxant being traditionally utilized for anxiety, irritability and restlessness, particularly in children.
- Gastrointestinal Conditions: Gastrointestinal complaints with a nervous component call for antispasmodic/relaxants such as Leonurus. Such complaints include nervous dyspepsia, irritable bowel and intestinal colic.
- Gynecologic Conditions: Leonurus is used for spasmodic dysmenorrhea. To calm the intensity of hot flashes and sweating in menopause, Leonurus can be utilized, particularly in conjunction with Salvia.

According to Weiss:[1299]

- Cardiovascular Conditions: There is indeed a medicinal action of Leonurus and that is mainly for functional heart complaints due to autonomic imbalance. It appears to be predominately sedative, similar to Valerian.
- Nervous Conditions: Further research is needed with reference to neuroses of wholly autonomic origin.

- Endocrine Conditions: Further research is needed with reference to treatment of hyperthyroidism.

According to Cook:[1300]

This herb is a pleasant and moderately strong tonic, somewhat diffusive in action and combining relaxing properties with a slight excess of stimulation. AS a tonic for nervousness, pains and palpitations of the heart, sufferings unique to women and habitual restlessness it is an agent deserving of the first consideration.

- Gastrointestinal Conditions: The stomach is braced by it. In cold preparations it promotes appetite and digestion, strengthens the uterus and is of superior value in hysteria, facilitates and increases the menses and relieves uterine pains dependent upon neuralgic or semi-rheumatic conditions.
- Gynecologic Conditions: It acts decidedly on the uterus. In warm preparations it maintains a gentle outward circulation and promotes the menstrual and lochail flow. In this form it proves of value in recent suppression of painful menstruation and hysterical forms of nervousness and palpitation. The emmenagogue action is quite reliable when the menses have failed from local feebleness and especially if combined with more specific emmenagogues.
- Nervous Conditions: The nerves receive the most benefit of its influence, whence it is classified as a nervine tonic and antispasmodic.

According to King:

Motherwort is emmenagogue, nervine, antispasmodic, and laxative. It is usually given in warm infusion in amenorrhoea from colds; and in suppressed lochia we have found it superior to any other remedy. Also useful in hysteria and chorea (King). The extract is recommended in nervous complaints, pains peculiar to females, in irritable habits, delirium tremens, typhoid stages, with morbid nervous excitability, all chronic diseases attended with restlessness, wakefulness, disturbed sleep, spinal irritation, and neuralgic pains in the stomach and head, and in liver affections. It is adapted to cases of nervous debility with irritation, nervous unrest, tendency to choreic or spasmodic movements, pelvic and lumbar uneasiness or pain, bearing down pains, and the irritability due to female disorders. Combined with Ictodes and resin of black cohosh, it forms a superior antispasmodic, nervine, and emmenagogue. Externally, it maybe used as a fomentation to the bowels in suppressed and painful menstruation, etc.

Pharmacy: Weiss indicates that Leonurus needs to be taken for a long period, over months to achieve a medicinal effect.

Infusion: The root in infusion is diuretic, and is stated to be efficient in obstinate intermittents. The seeds have been given in half-teaspoonful doses in water and in bilious colic. (King).

1 tsp./cup water; sig 1-2 cups TID (Dr. Alschuler)

As a warm preparation, it relieves pelvic congestion and exerts antispasmodic action on the uterus. In cold preparations, it acts more strongly as a digestive tonic (especially on the stomach), promotes suppressed menses secondary to pelvic weakness and relieves pelvic pain. (Dr. Alschuler)

2 tsp./cup water, sig 1 cup morning and night (Weiss)

sedative: equal parts Convallaria and Melissa (same amounts and sig for infusion above)

Decoction: from 2 to 4 fluid ounces, every 1, 2, or 3 hours (King)

Tincture 1:5 45% EtOH; sig 4-6 ml TID

Fluid extract 1:1 25% EtOH; sig 2-3 ml TID

Capsules- 250 mg/cap; sig 1-2 cap TID

Proprietary Preparations:

Cardisettes (Brenner): Leonurus, Crataegus, Khella and Cactus grandiflorus

Contraindications: In Chinese herbal medicine, Yi mu cao is contraindicated in pregnancy. Cook states to avoid use when the menses are too free or high febrile tendencies are present. Brinker contraindicates its excessive use in early pregnancy due to its emmenagogue effect (empirical) and the uterine stimulant action of its constituents stachydrine and leonurine (in vitro and animal studies)[1301]

Toxicity: Leonurus is generally safe and well tolerated.[1302]

[1296] Lahans T. Introduction to Chinese Herbal Medicine, Lecture notes. Winter 2000

[1297] Lahans T

[1298] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 203, 233, 245

[1299] Weiss RF. Herbal Medicine, 6th ed. Hippokrates Verlag GmbH 1996. p. 186

[1300] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy… Eclectic Medical Publications, Sandy, OR 1985 p. 507

[1301] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. p104

[1302] Mills and Bone p. 233

Leptandra virginica

Scrophulariaceae

Common name: Black root, Culver's root

Habitat: This plant is native throughout the United States.

Botanical description: Tall, herbaceous perennial plant grows to 3-4 feet. The stem is smooth and downy, has whorls of lanceolate, serrated leaves and terminates in a 6-10 inch spike of white flowers. The plant flowers in July and August. The root is cylindrical, somewhat branched and dark brown externally.

Historical uses: Leptandra was used by 19th century physicians in the treatment of typhoid fever for its effect on the liver and subsequent reduction in fever. Similarly, it was used for the treatment of malarial fevers.

Parts used: Root, dried

Constituents: [1303]

- Volatile oil: composition unknown
- Cinnamic acid derivatives: including, among others, 4-methoxycinnamic acid, 3,4-dimethoxycinnamic acid and their esters
- Tannins
- Gum,
- Resin (leptandrin)

Pharmacology: Not specifically known . The constituents of this plant have not been fully investigated.

Medicinal actions: Alterative, bitter tonic, choleretic, aperient

Traditional Medicinal Use:

Specific Indications and Uses: Drowsiness, dizziness; tenderness and heavy pain in the hepatic region with a wide area of dullness upon percussion, enfeebled portal circulation; the tongue is coated markedly white, the skin is yellow, there is a bitter taste, cold extremities, nausea, and dull frontal headache; thirst, with inability to drink; restlessness, with insomnia; lassitude and gloomy, depressed mental state to the point of disinclination to work or even move. King stated diarrhoea, with half-digested passages, or clay-colored evacuations, while Ellingwood claimed constipation as specific symptomology.[1304,1305]

Leptandra stimulates the glandular system to activity, and is valuable in chronic diseases of the mucous membranes. It was used as a key remedy in the treatment of malaria. All of the traditional authors agree on its effects as a tonic to the digestive system, choleretic and a stimulant to hepatic and glandular function.

- Gastrointestinal Conditions: Leptandra was used to strengthen the functional activity of the digestive system, favoring normal intestinal excretion and improving digestion. Scudder indicated its use when circulation to the gastrointestinal tract is weakened. Cook described its effect on the small intestines in removing material accumulations, with little direct effect on the large intestine. Its effect is slow, taking from 10 to 18 hours and was therefore not used as a cathartic. King considered it the best laxative for atonic conditions and also specified its use for constipation of the upper bowel and secondary to hepatic torpor.
- Hepatobiliary Conditions: Its primary influence was considered to be on the liver, directly stimulating the secretion of bile into the gall bladder, but not the ejection from the gallbladder. However, according to King, it was not considered a suitable remedy for jaundiced conditions when used alone and was combined with cholagogue remedies. Ellingwood agreed in its use as an auxiliary herb for jaundice, but stressed that it is absolutely indicated.
  Cook called it a mild, persistent, and reliable "hepatic relaxant". He called for Leptandra in all febrile cases, so long as the liver was deficient in activity.[1306]

Current Medicinal Use:

- Hepatobiliary Conditions: The dried root is a mild choleretic without acting as a strong laxative. The dried root is purely a choleretic (it does not act as a cholagogue) and is therefore most indicated in the treatment of jaundice. It exerts mild, persistent, gentle hepatic stimulation of bile production without stimulating the contraction of the gall bladder.
- Gastrointestinal Conditions: The bitter root also acts to tonify the digestive system, primarily the stomach and small intestinal glandular functioning, although it may cause nausea in some persons (due to excessive smooth muscle relaxation). It is most indicated in persons with atony of their stomach, duodenum and liver.

Current Research Review:

- Search of Medline revealed no human trials as of 11/17/02

Pharmacy: As an alterative it is most effective when combined with other tonic and stimulating alteratives.
1:1 fluid extract: 20-50 drops TID
1:5 tincture 5 ml TID; max. weekly dosage of 100 ml

Contraindications: Cook stated that Leptandra is contraindicated in jaundice, in the elderly, and in cases chronic debility such as when a general laxity of tissues exists unless it is combined with tonics and stimulants. [1307] Brinker adds that Leptandra be avoided with any bile duct obstruction, internal hemorrhoids, during menstruation or pregnancy.[1308]

Toxicity: Leptandra can cause nausea. The fresh root is a violent cathartic with the potential of producing violent emesis and bloody purging as well as abortion.[1309]

[1303] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001.

[1304] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[1305] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 312

[1306] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985 p.

[1307] Cook

[1308] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 90

[1309] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

Ligustrum lucidum

Oleaceae

Common name: White wax tree, Chinese glossy privet, Privet berry, Nu zhen zi

Habitat:

Botanical description: This is a shrub that grows to a height of 5 to 6 feet. It produces wand-like branches. The leaves are dark green, 1-2 inches in length, 1/2 to 1 inches wide, opposite, smooth and lanceolate. The flowers are small and numerous, white and in terminal panicles. The berries are spherical, black and in conical bunches. The seeds are convex on one side, angular on the other. Ligustrum grows in the East and Mid-west in woods and thickets and flowers in May and June.

Parts used: Leaves, fruit

Constituents: Oleanolic acid

Medicinal actions: Astringent, vulnerary, cardiotonic, diuretic, immunomodulator, anti-tumor, anti-bacterial

Medicinal use: This plant is rarely used in Western-based herbalism. Traditional Chinese herbalists always use Ligustrum as part of a formula; never by itself. It may be used for conditions such as acute viral pnuemonia, bronchitis, tonsilitis, gingivitis, laryngitis, dysentery, gastroenteritis and urinary tract infections. According to TCM, Ligustrum is contraindicated in cases of excess yin, relative yang xu, and kidney yang excess.

Western understanding of this plant is limited. It has been used historically as an astringent vulnerary plant. It may be applied topically to ulcerated tissue in order to speed the wound healing. Ligustrum is also useful internally for ulcerations of the gastrointestinal tract. Ulceration of the bladder which may occur as part of bladder cancer, a UTI, or passage of a renal stone will also respond to the internal use of Ligustrum. Finally, a gargle of Ligustrum is considered specific for sore throat and aphthous stomatitis.

Pharmacy: 30-60 grains of powdered leaves TID
1/2 tsp. leaves/cup infusion: 1 cup TID

Contraindications

Toxcity: Contraindicated in excess yin, relative yang xu, and kidney yang excess. TCM practitioners are best qualified to use this plant internally for conditions other than ulcerations.

Ligusticum porteri — Umbellifereae

Common name: Osha

Habitat: It grows in high altitudes (it never grows below 4000' and usually grows above 8000').

Botanical description: The root is a large fibrous tape root. It is brown on the outside with a yellowish core and a celery-like smell. The stem is hollow, growing to a height of 3-6 feet. The leaves are large, finely cut and are mostly at the base of the plant with few on the flowering stem. The flowers are white in a flat umbel, which ripen into an umbel of seeds.

Parts used: Radix

Constituents: Volatile oil, lactone glycoside, alkaloids, phytosterols, saponins, ferulic acid

Medicinal actions: anti-viral, diaphoretic, anti-bacterial

Traditional Medicinal Use:

No information is provided by King or Cook on this botanical. Various Native American tribes chewed on Ligusticum root in order to increase stamina and vitality.

Current Medicinal Use:

- Gastrointestinal Conditions: Ligusticum will soothe the gastrointestinal system, allaying the nausea while creating diaphoresis and immunostimulation.
- Pulmonary Conditions: Ligusticum is a very effective anti-viral and diaphoretic plant. It will decisively raise body temperature and then cause diaphoresis. For this purpose, it combines well with Achillea, Mentha pip., Sambuccus, Melissa and/or Eupatorium. It is especially indicated in viral infections of the respiratory tract. Ligusticum is most indicated in the beginning stages of a cold or flu or in someone who has had a nagging cough that has persisted for weeks. If used for beginning flu, it is specifically indicated in someone who has the beginnings of a cough and some nausea. Although Ligusticum tends to be used most often for viral infections, it also is helpful for bacterial infections. It is directly bacteriocidal.
- Topical Applications: Ligusticum may even be applied topically to wounds for its antibacterial and vulnerary properties.

Although there have not been any double-blind studies to verify its use, Chinese research suggests that a related species, *Ligusticum wallichii,* can relax smooth muscle tissue (perhaps thereby moderating the cough reflex) and inhibit the growth of various bacteria.[1310]

Current Research Review:

- Search of Medline reveled no human trials as of October 2002.

Pharmacy: Decoction: 1-2 tsp./cup water; 1 cup TID
1:7 tincture: 2-4 ml TID
External wash

Contraindications: Brinker suggests that Ligusticum may have emmenagogue properties.[1311]

Toxicity: No information is currently available.

[1310] Bensky D, Gamble A, Kaptchuk TJ. *Chinese Herbal Medicine: Materia Medica*. Seattle, Wash: Eastland Press; 1986:383–384.

[1311] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 179

Linum usitatissimum

Linaceae

Common name: Linseed, Flax

Botanical description: This plant grows up to 1 m in height. It is a slender annual plant which produces light blue, 5-part corollas which open in the sunshine. There are numerous narrow, linear, 3-nerved, glabrous leaves. Light brown capsules contain several seeds. The seeds are mostly glossy brown to reddish-brown, flattened and ovoid about 4-6 mm long and 2-3 mm wide.

Parts used: Seed

Constituents:

- Mucilage (3%-6%)
- Fixed oil (30%-45%): alpha-linolenic, linoleic, and oleic acids
- Protein (25%)
- Phosphatides (0.7%); Sterols; Cyanogenic glycosides (1.5%)

Pharmacology:

Flax seeds are taken internally to affect fatty acid ratios throughout the body. Flax seeds contain significant amounts of omega-3 fatty acids. These acids are precursors to anti-inflammatory prostaglandins and leukotrienes. Omega-3 fatty acids result in increased levels of eicosapentaenoic acid (EPA). EPA is found in high amounts in fish. Flax seed, while not as as efficient as fish oil in increasing EPA concentration, will significantly raise the EPA levels if the overall diet is low in omega-6 fatty acids (eicosanoids derived from arachidonic acid which are proinflammatory). In one human study, oral administration of flax seeds (50g/d) raises serum and red blood cell levels of omega-3 [these parameters reflect a systemic increase in omega-3 levels], lowers cholesterol levels, lowers postprandial blood glucose levels by 27%.

Another important constituent of flax seed and unfiltered oil is plant lignans. Lignans are similar in structure to endogenous sex steroid hormones. Secoisolariciresinol, matairesinol, and shonanin are lignan phytoestrogens found great quantities in flaxseed. Normally they are glycosidically linked to carbohydrates and in the large intestine are deconjugated from the carbohydrate portion by bacteria to produce mammalian lignans such as enterolactone and enterodiol. The aglycone lignans can be further modified to form the mammalian phytoestrogens enterodiol, enterolactone, and enterofuran, which are absorbed into the body and excreted in urine.[1312] These lignans are absorbed and appear to reduce the risk of cancer. Many lignans have antitumor, antimitotic, antioxidant, and phytoestrogenic actions.

The mucilage in the seeds absorbs water into the stool. The increased volume of the stool stimulates peristalsis via the stretch reflex. The mucilage further lubricates the colonic mucosa which aids in the passage of the stool.

Medicinal actions: Anti-inflammatory, demulcent, fiber supplement

Traditional Medicinal Use:

- Gastrointestinal Conditions: The Physiomedicalists took advantage of the demulcent property of Linum and noted that it is very soothing to the mucous membranes of the bowels, relieving inflamed and irritated conditions.[1313]

According to King, Linseed oil in doses of 2 fluid ounces twice a day, was said to have cured severe cases of piles within 2 or 3 weeks. While using Linum, King had his patients avoid liquors and stimulating foods. He also reported it as beneficial when internally administered in dysentery, colic, and lumbrical worms.[1314]

Used as an enema King found Linum advantageous in dysentery, hemorrhoids, and ascaris worms. He used one pint of linseed oil, combined with ½ ounce each, of oils of Origanum and Gaultheria, forms a pleasant cathartic; to be given in the same doses as castor oil.[1315]

- Pulmonary Conditions: The demulcent property was also utilized to soothe the mucous membrane so the lungs as well as to promote expectoration. The chief employment of flax seeds by the Physiomedicalists was in irritable coughs and similar pectoral difficulties.[1316]
- Genitourinary Conditions: Like other demulcents, flax seed was used in acute inflammation or irritation of the bladder and urethra.[1317]
- Topical Applications: The ground were used as an emollient and oily poultice, due to the observation that retains its soft character indefinitely upon inflamed surfaces.[1318]

Current Medicinal use:

Flax seed is an extremely popular prescription by naturopathic physicians. Flax seed has a wide variety of applications.

- Gastrointestinal Conditions: The seeds, whole or crushed, are used as a bulk-forming laxative. The mucilage in the seeds absorbs water into the stool. The increased volume of the stool stimulates peristalsis. The mucilage further lubricates the colonic mucosa which aids in the passage of the stool. These actions make flax seeds an excellent therapy for functional constipation (i.e. from IBS, laxative abuse, diverticulitis, gastritis, enteritis). It is important to drink a lot of water with the ingestion of flax seeds in order to avoid flatulence. The seeds are high in anti-inflammatory fatty acids [linolenic or omega –3] and therefore are especially indicated in gastritis and enteritis with excessive mucous production and constipation.

  In a double-blind study, 55 people with chronic constipation caused by irritable bowel syndrome received either ground Flaxseed or Psyllium seed (a well-known treatment for constipation) daily for 3 months. Those taking Flaxseed had significantly fewer problems with constipation, abdominal pain, and bloating than those taking Psyllium. The Flaxseed group had even further improvements in constipation and bloating while continuing their treatment in the 3 months after the double-blind study ended. The researchers concluded that flaxseed relieved constipation more effectively than Psyllium. [1319]
- Immune Conditions: Flaxseed has renoprotective effects in animal and human lupus nephritis. In lupus mice given flax lignan renoprotection was evidenced, in a dose-dependent fashion, by a significant delay in the onset of proteinuria with preservation in GFR and renal size, suggesting that SDG may have a therapeutic role in lupus nephritis.[1320]

  Flaxseed or its lignans has been investigated for its ability to help prevent or treat cancer, particularly cancer of the breast and colon.[1321] Epidemiological evidence suggests that people who eat more lignan-containing foods have a lower incidence of breast and perhaps colon cancer.[1322] The lignans in Flaxseed are phytoestrogens, phytoestrogens bind the same receptors where estrogen binds. If there is little estrogen in the body, for example after menopause, lignans may act like weak estrogen. However, when natural estrogen is abundant, lignans may reduce the hormone's effects by displacing it from cells; displacing estrogen in this manner may help prevent those cancers that depend on estrogen, such as breast cancer, from starting and developing.
- Metabolic Conditions: Several human studies have demonstrated that Flaxseed can lower cholesterol.[1323, 1324] In one study, 38 older women with high cholesterol ate bread or muffins containing either Flaxseed or Sunflower seed for 6 weeks, later switching to the opposing treatment for another 6 weeks.[1325] Total cholesterol dropped with both regimens, but only those on the Flaxseed regimen had significantly lower LDL. In another study, 29 men and women with high cholesterol ate muffins with either partially defatted flaxseed or a wheat bran placebo for 3 weeks each.[1326] Those eating flaxseed showed significant decreases in both total and LDL cholesterol, compared to little change with placebo. In none of these studies did flaxseed lower HDL ("good") cholesterol. While Flax **seeds** may be beneficial Flaxseed **oil** does not appear to be as good as **fish oil** for people with elevated triglycerides.[1327]
- Topical Applications: Flax seeds may be powdered and mixed with water to make a poultice for external application to areas of inflammation. The demulcent effects make flax seed poultice a soothing anti-inflammatory dressing.

Pharmacy:
Internally, the cracked or coarsely ground seed, in which only the cuticle and mucilage epidermis are damaged is used.
Internal - 1 tablespoon of whole or bruised (not ground) seed with 150 ml of liquid 2 to 3 times daily for gastritis and enteritis: 2 to 4 tablespoons of milled linseed for the preparation of linseed gruel.[1328]
Infusion:

1 TB of whole or crushed seeds with 4-8 oz water BID to TID (Alschuler)
2-3 TB of ground seeds with water to make a poultice or internal demulcent (Alschuler)
Injection: (rectal implant or retention enema)

Contraindications: Flaxseed is contraindicated in the following conditions: ileus, stricture of the esophagus and in the gastrointestinal area, acute inflammatory illnesses of the intestine, of the esophagus and of the stomach entrance.[1329] (This is an interesting description of contraindications by the PDR as the same source lists used for gastritis and enteritis as do many other authors).

Use of flaxseed and other bulking agents may cause reduced absorption of oral drugs due to adsorption to the mucilage.[1330]

Toxicity: No health hazards or side effects are known in conjunction with the proper administration of designated therapeutic dosages. The cyanogenic glycosides present no danger with the intake of therapeutic dosages. The use of large quantities of the drug as a laxative with too little fluid intake can lead to ileus.[1331]

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[1313] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy… Eclectic Medical Publications, Sandy, OR 1985 p. 514-5

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[1315] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

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[1323] Arjmandi BH, Khan DA, Juma S, et al. Whole flaxseed consumption lowers serum LDL-cholesterol and lipoprotein(a) concentrations in postmenopausal women. *Nutr Res.* 1998;18:1203–1214.

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[1325] Arjmandi BH, Khan DA, Juma S, et al. Whole flaxseed consumption lowers serum LDL-cholesterol and lipoprotein(a) concentrations in postmenopausal women. *Nutr Res.* 1998;18:1203–1214.

[1326] Jenkins DJ, Kendall CW, Vidgen E, et al. Health aspects of partially defatted flaxseed, including effects on serum lipids, oxidative measures, and ex vivo androgen and progestin activity: a controlled crossover trial. *Am J Clin Nutr.* 1999;69:395–402

[1327] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001.

[1328] PDR for Herbal Medicines, 1998

[1329] PDR for Herbal Medicines, 1998

[1330] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 72

[1331] Ibid

Lithospermum spp.

Boraginaceae

Common name: Common gromwell, Stoneseed

Habitat: The plant grows in deciduous forests and on sunny slopes.

Botanical description: The common gromwell is a plant that grows up to 3 feet in height. The flowers are small and greenish-white. The plant is covered with stiff hairs, as is characteristic with plants of the Borage family.

Parts used: Seeds, aerial plant especially leaves

Constituents:

Pigmented naphthaquinone derivatives of shikonin are produced at specific times and in specific cells of *Lithospermum.* Many members of the Boraginaceae family produce naphthaquinones in their roots. naphthaquinones are colored substances derived from phenylpropanoid and isoprenoid precursors. Plants of the borage family are distributed worldwide and the naphthaquinones from many of these plants have been used in diverse cultures as colorants for cosmetics, fabrics, and foods , and for medicinal applications, including antitumor, antiinflammatory, and antimicrobial agents . The chemicals involved in the antimicrobial activities studied to date are all derivatives of shikonin and its enantiomer alkannin.[1]

- Lithospermum acid (phenolcarboxylic acid);
- Naphthoquinone derivative (shikonin);
- Cyclitol (scyllitol);
- Cyanoglucoside-lithospermocide;
- Caffeic, chlorogenic and ellagic acids;
- Catechin-type tannins;
- Lithospermum red pigment (root bark);
- Mucilage
- Mineral salts (especially calcium and silicon salts)

Pharmacology: Lithospermum acid has anti-gonadotropic properties. It blocks the anterior pituitary's production of FSH and LH,[1332] and most likely TSH as well. *Lithospermum* also blocks thyroid secretion.

Freeze-dried extracts (FDE) of the plants Lycopus virginicus, Lycopus europaeus, Melissa officinalis, and Lithospermum officinale, as well as products of the oxidation of certain of their constituents, have been shown to exert antithyrotropic activity by virtue of their ability to form adducts with TSH that bind weakly, if at all, to the TSH receptor. The thyroid-stimulating immunoglobulin G (IgG) found in the blood of patients with Graves' disease (Graves'-IgG) resemble TSH in their ability to bind to the thyroid plasma membrane, probably at the TSH receptor, and to activate the gland. [2]

In vitro work suggests Lithospermum forms high molecular weight adducts with bovine TSH (bTSH), preventing it from binding to and stimulating adenylate cyclase in human thyroid membranes. Eight 3,4-dihydroxylated compounds, all structurally related to cinnamic acid, inhibited the binding of [125I] bTSH to human thyroid membranes. Of these, 4 (caffeic, rosmarinic, chlorogenic, and ellagic acids) are present in the plant, and 4 (3,4-dihydroxyphenylacetic acid, deoxyepinephrine, adenochrome, and nordihydroguaretic acid) are structurally related. These compounds were inactive when tested directly but became active when allowed to undergo auto-oxidation. With all 8 compounds, half-maximum inhibition of [125I] bTSH binding required quantities of oxidized product equivalent to 20-80 micrograms/ml (60-195 microM) of the original compound. [3]

Crude aqueous extracts of the plant Lithospermum ruderale have been shown to have antigonadotropic activity that resides in its polyphenolic fractions. A study examined the ability of one such polyphenol, lithospermic acid, and its oxidation product(s) (oxyLA) to inhibit luteinizing hormone secretion in vitro. [4] The study indicated that oxyLA may contain the primary antigonadotropic agents in L. ruderale.

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[1] Cell-specific production and antimicrobial activity of naphthoquinones in roots of lithospermum erythrorhizon Plant Physiol. 1999 Feb;119(2):417-28.

[2] Auf'mkolk M. Extracts and auto-oxidized constituents of certain plants inhibit the receptor-binding and the biological activity of Graves' immunoglobulins. Endocrinology. 1985 May;116(5):1687-93.

[3] Auf'mkolk M. The active principles of plant extracts with antithyrotropic activity: oxidation products of derivatives of 3,4-dihydroxycinnamic acid. Endocrinology. 1985 May;116(5):1677-86.

[4] Effect of purified lithospermic acid and its oxidation product on luteinizing hormone release in vitro. Biol Reprod. 1985 Sep;33(2):309-15.

Medicinal actions: Diuretic, emmenagogue, inhibitor of pituitary gonadotropins (FSH and LH), TSH antagonist

Traditional Medicinal Use:
King described this plant as diuretic, having been used in both acute and chronic cystitis, and likewise in certain calculous affections.

Current Medicinal Use:

- Endocrine Conditions: Lithospermum historically has been used as a contraceptive. Its inhibition of the production and hence secretion of FSH and LH from the anterior pituitary lead to anovulation. This effect is reliably achieved only after continuous daily use for at least 6 months. Women of certain Native American tribes and tribes throughout Africa have used and continue to use this plant for birth control. Lithospermic acid has been extracted and utilized for this purpose in animals. *Lithospermum* is an effective birth control, but does not have the 100% efficiency of oral contraceptives. For this reason, it is rarely recommended. However, in women who experience significant side effects from oral contraceptives, *Lithospermum* may be a viable alternative. It is especially indicated when combined with natural fertility awareness methods. In cases of estrogen or progesterone excess such as dysmenorrhea or PMS, *Lithospermum* is a valuable therapy.

  Lithospermum is also indicated in hyperthyroidism, especially secondary hyperthyroidism. It will reduce TSH stimulation of the thyroid as well as reduce thyroxine production.
- Genitourinary Conditions: One of the common names, Stoneseed, suggests its usefulness in relieving urinary and biliary lithiasis. While the mechanism remains unclear, *Lithospermum* may aid in the dissolution and passage of biliary and urinary stones. It also is a diuretic which encourages the flushing action through the kidneys.
- Topical Applications: In Asia, topical preparations of the root are used to treat burns, inflammations, wounds and ulcers. The naphthaquinones appear to exert anti-inflammatory actions.

Pharmacy:
Infusion: 1 tsp./cup water; 1 cup/day for contraception; 1 cup TID for hyperthyroidism and other estrogen and progesterone imbalances.
1:5 Tincture: 1-5 ml TID

Drug Interactions: No information is currently available from the selected resources.

Contraindications:[1333]

- **Nursing:** due to antiprolactin effects.

Toxicity: None reported, however this plant is an emmenagogue and is therefore contraindicated in pregnant women.

[1332] Weiss, RF, ibid, 320.

[1333] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 278

Lobelia inflata

Campanulaceae

Common name: Indian tobacco

Habitat: Lobelia is native to the Eastern United States.

Botanical description: Lobelia grows up to 2 feet high. The pale green leaves are sessile, alternate, ovate-lanceolate, 3-8 cm. long with toothed margins. The plant produces pale violet-blue flowers in August-Sept.

Part used: Aerial parts; collected at the end of flowering time. According to Cook, the herb and the seeds are of the same action, the seeds being twice the strength of the herb.

Constituents [1334]

- Piperidine alkaloids (6%): chief alkaloids L-lobeline (alpha-lobeline); companion alkaloids including among others lobelanine, lobelanidine, norlobelanine, isolobinine
- Chelidonic acid, Resins, Gums, Fats

Pharmacology

The lobeline alkaloid is responsible for most of lobelia's actions. Three new piperidine alkaloids were recently isolated from stems, leaves and flowers of Lobelia. In one study, the antiinflammatory potential of Lobelia was connected with the complement system. The ability of the residues, nonalkaloid fractions, alkaloid fractions and the three alkaloids at a concentration from 0.125 to 1.0 mg ml-1 to inhibit complement activation and thus to prevent inflammatory process was estimated in vitro in human serum via both pathways. All of them inhibited complement activity with a predominant action on CP. [1335]

Medicinal actions: Respiratory stimulant, expectorant, emetic, diaphoretic, anti-spasmodic, nervine, sialagogue (King also described it as secondarily cathartic, diuretic and astringent.[1336]

Traditional Medicinal Use: Lobelia was one of the most highly regarded medicines of the Eclectic and Physiomedical physicians. Cook described it as a pure relaxant, possessing only the faintest, transient, stimulating property, expending itself upon the fauces, the glands and mucous membrane of the mouth and respiratory organs. He further stated "the quality for which it is so greatly valued, is its peculiar influence in relaxing the entire circuit of the organs and tissues–making prominent and diffusive impressions upon and through the nervous structures, but proving itself capable of reaching every portion of the body under the directing influence of the vital force."[1337] The Physiomedical Dispensatory has an extensive monograph on Lobelia that is worth reading.

Specific Indications and Use: Lobelia is specifically indicated by the full, labored, doughy pulse; the blood moves with difficulty; pain in chest of a heavy, sore, or oppressive character; angina pectoris; cardiac neuralgia; pulmonary apoplexy; mucus accumulation in bronchi; convulsive movements; rigidity of muscular tissues; rigid os uteri, with thick doughy edges; rigid perineum, or vaginal walls; nausea; oppressive sick headache, with nausea. As an emetic when tongue is heavily coated at base.[1338]

- Cardiovascular Conditions: Lobelia was considered the drug for angina pectoris, neuralgia of the heart, cardiac congestion and pulmonary apoplexy.

To the Eclectics, Lobelia was a cardiac stimulant: although we class it with the sedatives, for all sedatives in medicinal (small) doses are heart stimulants. The most prominent indication for the drug is the full, oppressed, sluggish, doughy pulse. oppression, thoracic pain, difficult breathing, soreness or bruised feeling within the chest, nausea with tongue heavily coated at base, fullness of tissue. [1339]

- Dermatological Conditions: Lobelia was used in eruptive diseases when retrocession occurred, to promote determination of blood to the skin, promptly bringing the eruption to the surface. For similar purpose, It was also indicated in scarlatina and measles when the eruption was tardy in making its appearance.
- Gastrointestinal Conditions: Lobelia was used for intestinal obstructions and fecal impaction, particularly when cathartics would be contraindicated. Its antispasmodic action was put to use in any condition of spasm such as stranguary and spasm of the gall duct.

It was frequently used for indigestion and dyspepsia, infantile colic, and sick headache due to gastric derangement specified by the feeling of "qualmishness" and nausea present. For intestinal atony, lobelia was considered one of the best drugs for the relief of habitual constipation.

Cook described the appropriate dosing for the treatment of nausea and gastric irritation. See his Physiomedical Dispensatory for more information.

- Gynecologic Conditions: Lobelia was considered of value in obstetrical practice as it powerfully subdues muscular rigidity. The Eclectics considered Lobelia the remedy to overcome a thick, doughy, yet unyielding and rigid os uteri during parturition. The Physiomedicalists also indicated its use for a rigid uterine os during labor as well as hourglass contractions of the uterus and ineffectual

forms of labor in which a portion of the uterine fibers are rigid. At the same time, when dosed properly (see Cook…) Lobelia relaxes the perineal tissues without interfering with the action of those that are contracting properly. Yet, Lobelia was not used as a distinct parturient. It was observed that Lobelia did not give vigor to uterine contractions. On the contrary, its persistent use will gradually relax the entire uterus, and finally all contractile efforts will cease till the action of the lobelia has passed by; and this may readily ensue in cases where the uterine and vaginal structures are already flaccid.

- Inflammatory Conditions: It may be used in forming stages of febrile affections, and is especially indicated by a general sluggishness of the whole system with an oppressive feeling, and the tongue is heavily coated at the base.

To the Physiomedicalists, its use in fever was considered valuable beyond any other remedy. By relaxing the circulatory apparatus, it favors a full outward flow of blood, with diaphoresis. The relief obtained from the use of Lobelia in meningitis, pleurisy, peritoneal inflammation, and acute rheumatism, is probably due as much to its relaxing power over serous tissues as to its soothing impression upon the nerves. To achieve positive results, large repeated doses were used creating great relaxation of the body with increased perspiration. Again, see the Physiomedical Dispensatory by Cook for more information on this use.[1340]

- Neurological Conditions: Cook considered Lobelia unsurpassed for securing relief from the nervous restlessness of many conditions, such as acute hysteria, typhoid fever, delirium tremens, etc.
- Pulmonary Conditions: Perhaps the most important use for this drug was in the treatment of respiratory affections, particularly in congestive conditions. The rationale for its use was to relax the tissues, improve innervation and circulation, and increase expectoration when a large quantity of mucus is secreted and there is lack of power to remove it.

Because of its antispasmodic effects, it was given in asthmatic paroxysms, spasmodic croup, pneumonia (acute and chronic), pleurisy and whooping cough. All chronic forms of sore throat, especially when ulcerated, pneumonia, bronchitis, and laryngitis, asthenic laryngitis of children ; chronic catarrh; dry, hard, or barking coughs, colds, and all forms of irritation of the respiratory tract, with oppression were considered indications for Lobelia by the Eclectics.

The indications for this drug are the full, oppressed, or small, feeble pulse, precordial oppression, with difficult respiration, oppression anywhere in the chest, with accumulation of the bronchial secretions, cough with loud mucous rates within the chest.[1341]

- Topical Applications: According to King, there was one condition in which its use should not be overlooked, and that is in poisoning by Rhus toxicodendron. Externally, the infusion has been found useful in ophthalmic affections; and the tincture is a valuable local application to sprains, bruises, rheumatic pains, erysipelas, bites, stings of poisonous insects, spasmodic affections of the limbs, pains, and to produce muscular relaxation. Tincture of lobelia, painted upon the parts before suppuration has begun, is said to abort felons.[1342]

Current Medicinal Use: Lobelia was, and is, considered to be one of the best systemic relaxants that we know and is considered by many to be the supreme anti-spasmodic herb. It depresses the CNS, ANS, and neuromuscular functions. Lobelia is used primarily for its relaxant effects in the bronchioles. Its ability to relax the smooth muscle of the bronchioles make it an invaluable part of an acute or chronic asthma formula. Systemically, Lobelia exerts powerful effects. Lobelia reduces smooth muscle spasm and thus lowers arterial pressure and vascular tension. It is also stimulates vegetative processes, i.e. that of digestion and glands.

Results of human trials with lobeline have been mixed and generally negative. Preliminary uncontrolled studies suggest lobeline may improve lung function. [1343]

- Behavioral/Psychological Conditions: Lobeline shares a structural similarity with nicotine, and thus binds to nicotinic acid receptors and exerts many of the same effects to a lesser degree (lobeline is 1/20-1/5 as potent as nicotine). For this reason, Lobelia is a useful aid in smoking withdrawal.[1344] Overall, Lobelia is useful in the following respiratory conditions: pertussis, croup, bronchial asthma, bronchitis, pleurisy.
- Gastrointestinal Conditions: Even though Lobelia can cause emesis, it is also used to treat emesis if it is due to spasm of the stomach. It relaxes the tissue that is in spasm while exerting an overall relaxation effect on the CNS and ANS (without causing a narcotic action).
- Pulmonary Conditions: The alkaloids in Lobelia exert paradoxical effects. Lobeline is a powerful respiratory stimulant by stimulating the respiratory centers and exerts this effect even in relatively small doses. Isolobeline is an emetic and respiratory relaxant (relaxes smooth muscle) that most powerfully exerts its action at higher doses. The combined action of both of these alkaloids makes Lobelia a stimulating relaxant. The net effect in the lungs will be a promotion of mucous secretion, expectoration and a reduction in bronchial spasm.
- Pain Conditions: Lobelia is a potent anodyne when the pain is secondary to spasm.
- Topical Applications: Externally, Lobelia is used as a poultice in the treatment of boils and ulcers. Lobelia acts as a counter-irritant when applied externally. A Chinese species, L. radicans is also used externally and internally to treat snake bite (if respiratory depression occurs).[1345,1346]

Pharmacy: Capsicum is often combined with Lobelia in order to reduce the systemic relaxant effect (due to the stimulating and tonic properties of Capsicum). In small, frequent doses, Lobelia causes perspiration.

Infusion: 1/4-1/2 tsp dried leaves/ cup water; sig 1 cup TID

Tincture 1:5 60% EtOH fresh or 1:8 60% EtOH dried; 0.5 ml TID

Contraindications: Lobelia is contraindicated in general relaxation and dyspnea especially when due to a weakened heart or valvular incompetence. Cook stated to avoid Lobelia in the treatment of "humid" asthma and difficult breathing accompanying heart disease.[1347]

Brinker notes the use of Lobelia being contraindicated in nervous prostration, shock or paralysis; heart disease (including cardiomegaly, fatty heart, pericarditis with effusion, valvular incompetence, cardiac decompensation, sinus arrhythmia or bundle branch block); pneumonia or pleural effusion; hypertension; low vitality; pregnancy or tobacco sensitivity.[1348]

Toxicity: Sx: burning esophagus, salivation, N/V, weakness, stupor, tremors, paralysis, tachypnea, hypothermia, rapid pulse, pinpoint pupils, unconsciousness, convulsions, coma, exhaustion, sweating, prostration, miosis, death.

The toxic dose is variable and some individuals are sensitive to the therapeutic dose.

[1334] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[1335] Philipov S, Phytochemical study and antiinflammatory properties of Lobelia laxiflora L. Z Naturforsch [C]. 1998 May-Jun;53(5-6):311-7.

[1336] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[1337] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985

[1338] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[1339] Felter

[1340] Cook

[1341] Felterc

[1342] Felter

[1343] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[1344] Willard, T., Textbook of Advanced Herbology, (Wild Rose College of Natural Healing: Calgary), 1992

[1345] Pharmocology and Applications of Chinese Materia Medica Vol 1", Ed. H. Chan

[1346] P. But, Pub. World Scientific (1986) Singapore

[1347] Cook

[1348] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 93-4

Lomatium dissectum — Apiaceae

Common name: Leptotaenia, Toza root, lomatium

Habitat: Lomatium grows from Vancouver Island and Southern BC south to S. California, Nevada, New Mexico and Colorado. It grows from sea level to 2500 meters.

Botanical description: Lomatium dissectum is a spring flowering perennial. It has a large taproot and grows 20-60 inches high. Several hollow, ribbed stems rise form the top of the root and culminate in finely divided leaves and large umbels of yellow to brownish-purple flowers.

Part used: Radix

Historical uses: Lomatium was known to many Western plateau region Native Americans as Toza. It was used as nutritive food and as an internal remedy for all types of infection, especially those of the eyes, respiratory tract and urinary tract. Lomatium was one of the most widely used medicines of the Native Americans of the western U.S. A decoction of the root was used internally and the above ground portion was smoked or burned and inhaled to treat coughs, colds, hayfever, bronchitis, asthma, influenza, pneumonia, and tuberculosis. The decoction was applied externally for cuts, sores, rashes and the oily sap was used on skin lesions and in the eyes for trachoma and gonorrheal infections. The raw root was chewed for sore throat and used as a poultice for swellings, sprains, and rheumatism.

Constituents: Root- essential oil, gums, resins, glycosides (coumarins and saponins), carbohydrates, protein, fatty acids, ascorbic acid (22%).

Pharmacology: Tetranoic acids and a glucoside of luteolin appear to be the main anti-microbial agents in Lomatium root. The oil extract of Lomatium partially or completely inhibits growth of: Corynebacterium diptherium, Diplococcus pneumonia, Streptococcus pyogenes and S. viridans, Escherichia coli (4 strains), Pseudomonas aeruginosa, Proteus vulgaris and Mycobacterium tuberculosis, three strains of Shigella, two strains of Proteus, Staph. aureus., Hemophilus influenza, Neisseria gonorrhea, and Candida albicans. The degree of inhibition is comparable to that of penicillin in comparable concentration.

In general, coumarins have estrogenic, spasmolytic, sedative, anthelmintic actions. Coumarins activate adrenaline and ACTH-induced lipolysis and insulin-induced lipogenesis. Coumarins are vasodilatory and are non-toxic. The coumarins in Lomatium have significant antimicrobial activity. The furanocoumarins have antiviral activities against both DNA and RNA viruses. The coumarins easily penetrate the virus coat as well as bacteria, yeast and animal cell. This antimicrobial activity has been demonstrated in-vitro and in-vivo.

Saponins are tonic, tranquilizing, expectorant, antitussive, anti-tumor, antimicrobial, and anti-inflammatory. Saponins stimulate the production of serum proteins and water soluble triterpenoidal saponins enhance antibody production. The saponins in Lomatium presumably act similarly to saponins in general.

The high ascorbic acid content of Lomatium root contributes to its immunostimulatory actions. The carbohydrate content of Lomatium probably represents some polysaccharides which are immunostimulatory. Finally, the volatile oils are antiseptic, spasmolytic, and sedative.

Medicinal actions: antimicrobial inc. antiviral, antifungal, and antibacterial, expectorant, antitussive, antiseptic

Traditional Medicinal Use: No information is currently available from the selected resources.

Current Medicinal use: Lomatium was used successfully by the American medical establishment (thanks to the Native Americans) in the early 1900's during an influenza outbreak. However, after the outbreak was over, interests in Lomatium died out. In the latter decades of the twentieth century, the interest in Lomatium has grown, perhaps coincident with the prevalence of viral diseases.

- Infectious Conditions: Overall, Lomatium is useful in acute and chronic viral, bacterial, fungal infections and other inflammatory disorders of the respiratory system. It is most effective in treating infections when it is given as early as possible and in small frequent doses. Lomatium is particularly well suited for respiratory infections, not only for its antimicrobial actions, but also because it is an excellent expectorant. The saponins irritate pharyngeal and gastrointestinal mucosa which causes a reflexive hydration of mucus produced in the respiratory tract. This allows for easier expectoration and reduction of spasmodic coughing. Lomatium is also very beneficial in the treatment of chronic fatigue immunodeficiency syndrome. For some people, a chronic viral infection is at the root of this disorder. Lomatium is an extremely effective antiviral agent in these people.

Current Research Review:

- Search of medline revealed no human studies as of November 2002.

Pharmacy: Tincture 1:5 55% EtOH; sig 1-2 ml TID

Lomatium isolate: Chronic viral illness: sig 12 drops TID x 2 weeks, maintenance dose 8 drops BID
Acute viral illness: sig 12 drops TID

Contraindications:

Furanocoumarin containing plants can cause photosensitization to UV light. Use of Lomatium should be avoided during excessive periods in sunlight or while undergoing cosmetic or therapeutic UV light exposure.[1349]

Toxicity:

The resin fraction occasionally causes a whole-body rash in some people. There is not enough information at this time to determine if the resins are necessary for the medicinal action of Lomatium. Another set of constituents, known as coumarins, may also contribute to the onset of rash.[1350] The rash is pruritic, generalized and maculopapular that mimics measles. The rash resolves several days after Lomatium is discontinued. The Lomatium isolate is prepared by separating out the resin. This form of the medicine can be used without the rash side effect.

[1349] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 211

[1350] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

Lycopus virginicus and L. europeus

Labiatae

Common name: Bugleweed, sweet bugle, gypsywort, water bugle

Habitat:

Botanical description: Characteristic mint family square stem gives rise to opposite, glabrous leaves, elliptical-lanceolate, toothed above. The small white flowers occur in axillary clusters with a purplish four-lobed corolla. The plant prefers damp ground in grassland, along streams and ditches.

Parts used: aerial parts, collected just before the buds open

Constituents:

- Phenolic acid derivatives (caffeic, rosmarinic, chlorogenic, ellagic)
- Pimaric acid methyl ester (in *L. europeus*)
- Lithospermic acid

Medicinal actions: Sedative, astringent, anti-tussive, diuretic, peripheral vasoconstrictor, anti-hyperthyroid actions

Pharmacology:

Lithospermic acid and other organic acids (especially caffeic acid) are believed to be responsible for the activity of Lycopus. These acids decrease levels of several hormones in the body, particularly thyroid-stimulating hormones and the conversion to thyroxine (T4). Administration of Lycopus extracts results in decreased TSH, T3 and T4 levels in animal models[1351] and Lycopus has been shown *in vitro* to prevent TSH from binding to and activating adenylate cyclase in human thyroid membranes.[1352] Lycopus inhibits the binding of antibodies to the thyroid gland. These antibodies can cause Graves' disease, the most common form of hyperthyroidism. All these actions help explain Lycopus' benefit in people with overactive thyroids.

Lycopus also decreases production of the pituitary gland hormone prolactin, an elevated level of which is associated with female reproductive difficulties and enlarged breasts in men (gynecomastia). [1353, 1354]

Traditional Medicinal Use:

Specific Indications and Uses: Vascular excitement; hemorrhage, in small amounts, resulting from determination of blood to the lungs, kidneys, or gastro-intestinal organs; albuminuria, with frequent pulse; cough, with copious expectoration of mucus or muco-pus, especially debilitating chronic cough; wakefulness and morbid vigilance, with inordinately active circulation; frequent pulse, with high temperature, and in tubercular deposits.

Lycopus filled an important place in Eclectic therapeutics. King described it as a sedative, mild narcotic, mild astringent, and tonic where it action is chiefly exhibited on the vascular and sympathetic nervous systems. By its action as a nervine it was use to give rest and quiet pain. By its control over the circulatory apparatus it slows the pulse and brings down the temperature. Tumultuous action of the heart and consequent increase of the circulation through the lungs are controlled by it. It was employed in acute cases to control fever and inflammation.

Cook noted that Lycopus is distinctly soothing, acting on the peripheral, rather than the central nervous system. Lycopus was used in conditions marked by heightened sensitivity and irritability. He describe its action as relaxant and moderately stimulant, of the very mild tonic character, and apparently leaving behind a slightly astringed impression on mucous membranes. Cook noted its action on nervous forms of spermatorrhea, and its soothing tonic influence on the uterus, rendering it of service in neuralgia, and painful and excessive menstruation.

- Cardiovascular Conditions: King noted that its sedative action is most pronounced and most frequently indicated where the vascular action is tumultuous, rapid pulse, and lack of cardiac power, particularly in advanced stages of acute disease with great debility, and in chronic disease with frequent pulse. As a sedative, Scudder classed it with Aconite and Veratrum.

Cook observed Lycopus to relax the capillaries at the same time that it soothes arterial excitement; and thus slowly diverts the circulation outwardly, lessening the labored efforts of the heart. Such an effect was noted by relief of to relieves a rapid and hard pulse. However, its influence on the cardiovascular system was considered not to be suited for febrile condition, but rather conditions associated with cardiac and nervous irritability, rheumatic and gouty taints, etc.

Cardiac disease, both organic and functional, have been markedly impressed by Lycopus. Administered to patients suffering from endocarditis and pericarditis it quickly subdues the inflammation. It is a good remedy for cardiac palpitation, dependent on irritation of the cardiac nerve centers, or when arising from organic lesions. It is best adapted to those forms of heart disease characterized by irritability and irregularity, with dyspnea and precordial oppression. Lycopus powerfully increases the contraction of smooth muscle, particularly

those of the heart and arteries, hence its value in cardiac dilatation and hypertrophy which have been known to undergo marked improvement under its administration. It quickly relieves the suffering and anxiety nearly always experienced in heart diseases.

Lycopus has given good results in hemorrhages, being particularly adapted to those cases in which the bleeding is frequent but small in amount. Under such conditions specific Lycopus was considered valuable in hemoptysis, epistaxis, hematemesis, hematuria, and uterine and intestinal hemorrhage.

- Endocrine Conditions: Several cases of diabetes mellitus have been reported, through the Eclectic Medical Journal, as benefited by lycopus. Lycopus as also favorably influenced exophthalmic goiter.
- Gastrointestinal Conditions: Lycopus improves the appetite and acts as a mild gastric tonic. It was observed to normalize gastric secretion, enhancing proper digestion of necessary nutrients. As a remedy for painful and distressing forms of indigestion, specific Lycopus was found advantageous as well as a mild tonic in general debility. Cook observed that it relieves pain, diminishes discharges slowly, and gradually gives tone to the alvine canal.

Lycopus was used by both the Physiomedicalists and Eclectics in dysentery and diarrhea and is equally valuable to allay irritation and inflammation in gastritis and enteritis, especially acute gastric disturbances and inflammatory diseases secondary to excessive alcohol consumption. Lycopus has been used both for its sedative effects and for its influence on the gastrointestinal troubles accompanying intermittent fevers.

- Genitourinary Conditions: Cook noted that it relieves pain, diminishes discharges slowly, and gradually gives tone to the kidneys, lessening excessive irritation, abating enuresis, and relieving achings in the kidneys and bladder.
- Pulmonary Conditions: Lycopus was considered of great value in acute pulmonary complaints and of greater utility in chronic lung conditions. In the pulmonary system Lycopus was observed to act as a gentle sedative and tonic. King noted that Lycopus reduces the frequency and force of the heart's action (in contrast to above) indicated it in pulmonary lesions with irritation, cough and tendency to hemorrhage. It was particularly valuable in chronic cases with copious secretion of mucus or mucopurulent discharge. It lessens irritation, allays the distressing cough so frequently encountered in chronic bronchitis, pneumonia, and tuberculosis. Here it gives rest, alleviates the pain and quiets the vascular excitement. It was one the best Eclectic remedies for hemoptysis. Cook also observed, that by equalizing the circulation and soothing the nerves, Lycopus could relieve harsh coughs and arrest bleeding of the lungs.

In tuberculosis, it was a remedy to relieve the distressing symptoms, administered in drop doses every hour. For this condition, Cook noted that its soothing and tonic influence is much more favorable than the relaxing expectorants which were commonly employed.

Lycopus was also considered valuable in acute as well as chronic pneumonia. In ordinary acute catarrh it was administered with Aconite, Eupatorium, and other indicated agents. For pectoral purposes, the Physiomedicalists combined Lycopus with Aralia racemosa, Symphytum, Prunus, and similar agents.

- Topical Applications: Bugleweed, simmered with fresh butter or petrolatum, may be employed as a topical dressing for burns and irritable ulcers.

The Physiomedicalists relied on Lycopus to soothe and heal fistula through frequent ingestion and as a wash to the affected part. Cook also used only a strong ointment, prepared of the solid extract triturated with a carrier such as lard. Such a preparation had been used in a varieties of fistulas from lachrymal fistula to large abscesses in the lumbar region to chronic scrofulous ulceration.

Current Medicinal Use: The specific indications for *Lycopus spp.* include: "Vascular excitement, with rapid, tumultuous action of the heart, but lacking power; hemorrhage, passive and in small quantities. . . chronic debilitating cough, with weak and rapid heart action and expectoration of mucous; morbid vigilance and wakefulness, with inordinately active but weak circulation. . . polyuria. . ."[1355]

Lycopus was highly valued by the Eclectic physicians for its use in people with rapid, weak heart rates and generalized debility. It was thought that *Lycopus* acted upon the sympathetic nervous system and vascular system. *Lycopus* was observed to lessen anxiety and to slow and strengthen the heart. One consequence of these actions was to reduce cor pulmonale and the passive lung hemorrhage associated with this condition. *Lycopus* was often the remedy of choice in chronic coughs with blood in the sputum, especially if these symptoms were associated with a rapid heart rate and/or palpitations. Finally, the Eclectic physicians used *Lycopus* for insomnia with concomitant agitation and anxiety.

Current understanding of *Lycopus* encompasses these indications, but pinpoints the pathology to the thyroid gland. In cases of mild to moderate hyperthyroidism, *Lycopus* may be helpful in blocking TSH from binding to the thyroid. *Lycopus* also inhibits iodine metabolism and thyroxine release from the thyroid gland.[1356] Finally, as mentioned above, *Lycopus* inhibits peripheral T4 conversion. These actions will cumulatively reduce the symptoms of hyperthyroidism including agitation, insomnia, palpitations, and weight loss. Although *Lycopus* is not as strong as synthetic thiouracils and mercaptoimidazoles, *Lycopus* is much safer. *Lycopus* is often used in combination with other anti-thyroid herbs such as *Melissa officinalis, Lithospermum spp.,* and *Leonurus cardiaca.*

Pharmacy: The alcohol extract of *Lycopus* appears to be the most efficacious preparation. The alcoholic extract maximizes the amount of unoxidized phenolic compounds—the constituents associated with the anti-thyroid activity. Cook noted that excessive heat dissipates its soothing properties.

1:5 tincture—5 ml TID; maximum weekly dose is 100 ml

Dried herb—1 tsp./ cup water; infuse 20 minutes; 1 cup TID

Drug Interactions:[1357]

- **Thyroid hormone:** (speculative) as it may interfere due to blockage of conversion of T4 to T3 in the liver and inhibition of TSH (in vitro, animal)
- **Radioactive Iodine:** (speculative) may interfere by altering the regulatory metabolism of the thyroid hormones (in vitro).

Contraindications:[1358]

- **Low thyroid activity or nontoxic goiter** (speculative) due to it antithyrotropic activity (in vitro, animals) and inhibiting conversion to T4 to T3 in the liver (in vitro).
- **Pregnancy or nursing:** due to antigonadotropic, antithyrotropic and antiprolactin activity (speculative).

Toxicity: None reported.

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Marrubium vulgare — Labiatae / Lamiaceae (Mint Family)

Common name: Horehound**,** White horehound.

Common Trade Name: Horehound Herb, Hore Hound Tea – as capsule of fluid extract (300mg), lozenges, syrup, tea, powder, & confectionaries.[1359]

Habitat: Native to Europe, Temperate zones of N. America, esp. from Maine, southward of Texas & westward to California & Oregon. It grows on dry, sandy fields, waste areas & roadsides w/ poor soil.

Botanical description: The entire plant is covered in white, downy hairs; giving it a 'hoary' appearance. Horehound is a perennial fibrous root w/ numerous annual bushy stems, which generally grow to a height of 1-2 feet. The stems are white, wooly & square. The leaves are wrinkled, opposite, oval, rough, crenately-toothed, w/ veins & hairs on the surface. Lower leaves rest on a long petiole; upper leaves are nearly sessile. The flowers are small, white, strongly two-lipped & densely crowded at the uppermost axils of the stems.

Parts used: Dried leaves & flowering tops harvested while in flower, before the opening of the flowers b/w June & September.

Energetics: Bitter, Pungent. Cooling. (-) Kapha & Pitta. (+) Vata.[1360] Affinity for the chest & lungs.

Constituents:[1361]

- Bitter Principles - Hydroxy Diterpenoid Lactones: chief components are Marrubiin (0.1-1.0%) & Premarrubiin (0.1%).
- Caffeic acid derivatives: including Chlorogenic acid & Cryptochlorogenic acid.
- Flavonoids: including Chrysoeriol, Vicenin II, Lactoyl flavones (i.e. luteolin-7-lactate & apigenin-7-lactate).
- Volatile oil (traces): including Camphene, p-Cymene & Fenchene.
- Other: Diterpene Alcohols, Alkaloids, Choline, Alkanes, Phytosterols, & Vitamin C.

Pharmacology:

Although the exact mechanism is still yet unknown, the extectorant action of Marrubium is believed to be d/t its content of volatile oils, resins & to marrubine. Its bitter principles stimulate the production of gastric juices, w/ marrubinic acid acting as a choleretic.[1362] The volatile oils are also antimicrobial & hypotensive.[1363] The flavonoids are anti-inflammatory in action.[1364] T Tannins help to astringe & tonify mucous membranes.

Medicinal actions: Expectorant. BitterTonic. Diuretic. Stomachic. Vermifuge. Diaphoretic. Anti-spasmodic. Astringent. Cholagogue. Vulnerary.

Current & Traditional Medicinal Use:

Marrubium is considered a stimulant tonic, expectorant, & as a diuretic w/ a diffusive action. The skin and mucous membranes are chiefly affected by it. Along w/ the conditions listed below, Marrubium has also been indicated in jaundice, amenorrhea, & hysteria as a warm infusion. As a warm infusion, Horehound will promote perspiration & the flow of urine.

- **Gastrointestinal Conditions:** The cold infusion is an excellent tonic for some forms of dyspepsia. In large doses, Marrubium was used as a purgative to expel worms. Horehound was also useful in cases of mercurial salivation.[1365]
- **Pulmonary Conditions:** Traditionally, Marrubium was used as a stimulant to laryngeal & bronchial mucous membranes. Horehound was often used as syrup to treat: coughs, colds, chronic catarrh, asthma, & all other pulmonary affections. Currently, Marrubium is most indicated in the treatment of bronchial conditions w/ weak appetite & sluggish digestion; or as a digestive rx when there is associated respiratory weakness. As an expectorant, Horehound is a diffuse & gentle tonic. It tends to be amphoteric to the lungs, in that it supports the removal of excess mucous, but also helps to decrease excessive discharge. Marrubium is currently indicated in the tx of: colds, bronchitis, asthma, catarrhal dyspepsia, coughs of any kind, as a gargle for pharyngitis, & in liver & stomach disorders. The anti-inflammatory properties of the flavonoids give Marrubium usefulness in the treatment of sinusitis. Horehound is most indicated as an acute therapy rather than a chronic one, especially for respiratory conditions.
- **Hepatobiliary Conditions**: A warm infusion is best for jaundice & in the promotion of diaphoresis & diuresis. Marrubine also increases bile flow & hence its use as a cholagogue.[1366]
- **Topical Applications:** Marrubium can also be used externally as a vulnerary. Horehound is thought to only aid tissue healing, but will not promote complete healing; hence it is best combined with other herbs of vulnerary action.

Current Research Review:

- Search of Medline yielded no human studies as of September 2002.

Pharmacy:

The warm infusion will produce diaphoresis, and sometimes diuresis while the cold infusion was used for digestive and pulmonary complaints.[1367, 1368] Although no human trails support its use, the German Commission E monograph recommends 4.5 grams of horehound per day or 2–6 tablespoons of the pressed juice for use in respiratory complaints.[1369]

Syrup or tinctures are the best forms for respiratory conditions.

A cold infusion is best when this herb is used as a simple. When combined w/ other herbs, a hot infusion of tincture is most effective. Example of combined tincture: 2-15 gtt Scutellaria lateriflora, 20-45 gtt Asclepias tuberose, 5-40 gtt Marrubium vulgare.[1370]

- Dried herb: 4.5 qd.[1371]
- Juice: 2-5 Tbsp qd[1372]

Contraindications: Was not considered a suitable agent to use in dry and irritable coughs, and in patients with a tendency to spasmodic asthma.[1373] Contraindicated during pregnancy.[1374]

Toxicity: Hypertension may occur with chronic use

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Matricaria recutita/ M. chamomilla

Asteraceae

Common name: Chamomile, German chamomile

Habitat:[1375] (M. recutita) Indigenous to Europe and northwest Asia, naturalized in North America and elsewhere.

Botanical description: (M. recutita)[1376]

- Flower and Fruit: Flower heads are terminal and long-pedicled. The flower is white with a yellow center. The margin flowers are obtuse with a tunicate margin. The ray florets are white, linguiform, female, and 3-totthed. The disk florets are tubular, androgynous, 5-toothed, with a hollow receptacle.
- Leaves, Stem and Root: 20-40 cm high herb with erect glabrous stem, which is branched above. The eaves are 2-3 pinnatisect and have a narrow thorny tip.

Parts used: Flowers

Constituents:

- volatile oil (0.3-1.5%) containing: alpha bisabolol, alpha bisabolol oxides, sesquiterpenes (anti-inflammatory, anti-spasmodic) such as chamazulene, tricyclic alcohols, bicyclic alcohols, dicyclic ethers and matricin (usually converted to chamazulene).[1377]
- coumarins: umbelliferone, herniarin
- flavonoids: methoxylated flavones and flavonols, apigenin, luteolin, quercetin
- glycosides; salicylic acid; choline; fatty acids; mucopolysaccharides

Pharmacology:

- The volatile oils in this plant are primarily responsible for its anti-inflammatory, anti-spasmodic, and anti-microbial effects. The chamazulene volatile oil gives the distilled oil a blue color. Chamazulene is converted to azulene during distillation or when steeped (heat and steam). Azulene is a strong anti-inflammatory constituent. The mechanism for the anti-inflammatory effects of azulenes are unclear. They appear to be due in part to activation of the pituitary-adrenal axis, which causes release of cortisone, which in turn prevents the release of histamine from cells. Another proposed mechanism is that the chamazulenes inhibits 5-lipoxygenase mediated synthesis of leukotrienes. Azulene is a gentle sedative, restoring the nervous system to a calmer state.[1378]
- The alpha-bisabolol is anti-inflammatory and anti-spasmodic in that it enhances prostaglandin production thus strengthens mucosal protective barrier (therefore protective against ulcers). The alpha-bisabolol is useful in the treatment of ulcers for the reason that it decreases pepsin release without changing the pH. The dicyclic ether is a strong smooth muscle relaxant by decreasing sympathetic sensitivity. Sympathetic innervation decreases peristalsis.[1379]
- The flavonoids are antiinflammatory and anti-spasmodic, stabilizing capillaries and relaxing smooth muscles, particularly in the gastrointestinal tract.[1380] The flavonoid apigenin (5,7,4'-trihydroxyflavone) has been reported to have antianxiety activity. The chemical modification of the flavone nucleus dramatically increases the anxiolytic potency.[1381]

Medicinal actions: Sedative, carminative, antispasmodic, analgesic, anti-inflammatory, and anti-septic,[1382] antiphlogistic, musculotropic, anti-peptic, anti-spasmodic, vulnerary, deodorant, skin metabolism stimulant,[1383] anti-ulcer, diaphoretic,[1384] anti-diarrheal, anti-emetic, carminative, anti-anaphylactic

Traditional Medicinal Use:

- Folk medicine: Used internally for diarrhea and flatulence. Used externally for furuncles, hemorrhoids, abscesses, and acne.[1385]
- King described the effect of Matricaria as having two particular specific fields of action: on the nervous system, subduing nervous irritability, and on the gastrointestinal tract, relieving irritation. He described a Matricaria patient as restless, irritable, discontented, and impatient. In children, there is marked irritability and the child is only appeased when continually carried. The child is peevish and fretful, the stools extremely fetid, and may excoriate around the anus more or less. In appearance they vary—may be watery and green, or slimy, perhaps in yellow and white lumps, or it may be of undigested curds of milk, imbedded in a green mucus—an appearance aptly compared by Prof. Bloyer to "chopped eggs and greens." [1386]
- Specific Indications and Uses: Nervous irritability, with peevishness, fretfulness, discontent, and impatience; sudden fits of temper during the catamenial period; muscular twitching; morbid sensitiveness to pain; head sweats easily; alvine discharges, fetid, greenish and watery, and of green mucus with curds of milk, or of yellow and white flocculi, associated with flatulence,

colic, and excoriation of the anal outlet; a remedy particularly fitted for the disorders of dentition, and to correct the condition threatening to end in dentition convulsions.[1387]

- Dermatology: Matricaria was used for skin eruptions and rashes.
  - Gastroenterology: King observed that nervous manifestations calling for Matricaria are nearly always present in the disorders of the GI tract such as flatulent colic with distension and irritative (vs. atonic) diarrhea. In subacute inflammation and in congestion of the liver, small doses of Matricaria were considered very efficient with costive bowels, difficult urination, irritability, and RUQ tenderness.
  - Gynecology: King noted that Matricaria (specific or infusion) is valuable in the treatment of amenorrhea, with sense of weight and heaviness in the uterus, bloating of the abdomen and accompanied with sudden nervousness. The infusion, given to the extent of producing free diaphoresis, was used to relieve dysmenorrhea and to prevent the formation of clots. In pregnancy, Matricaria was employed to relieve nervous twitching, cough, false pains, etc., accompanied by great unrest. Alone, or associated with Phytolacca, Matricaria was applied to relieve soreness and swelling of the breasts in lactation, and is useful in suppression of the lacteal secretion.
  - Inflammatory Conditions: If fever is present, the Eclectics combined Matricaria with Aconite.
  - Neurology/psychiatry: The Eclectics noted that the action of Matricaria is most pronounced on the nervous system its, affecting both the sensory and motor nerves. Matricaria was considered to be peculiarly adapted to the nervous manifestations of dentition, and in other affections where there seems to be a morbid susceptibility to pain. Earache, rheumatic and neuralgic pains, abdominal neuroses, etc., are relieved by it when the nervous apprehension is out of proportion to the actual amount of pain experienced. *1388*
  - Pain Conditions: Matricaria was applied in various painful conditions with Aconite including earache, rheumatism and catarrhal affections of the bowels, ears, nose, and eyes.
  - Topical Applications: Locally, it has been used as a wash for leucorrhoea, mammary abscess, ulcerating bubo, and catarrhal conjunctivitis.

Current Medicinal use:

- Gastroenterology: Gastrointestinal spasms, inflammatory diseases of the gastrointestinal tract, peptic ulcer.[1389] Matricaria, strengthens the mucosal protective barrier, regulates pepsin release, improves motor function and relaxes smooth muscle. If cytotoxins or mucosal invasion is part of the pathogenic process, the anti-inflammatory constituents of Matricaria are indicated. The smooth muscle relaxing effect is most pronounced on gastric smooth muscle. In fact, excessive use of Matricaria teas can result in stomach muscle flaccidity. Gastric indications include nausea, dyspepsia, food intolerances, peptic ulcer and gastro esophageal reflux disease (GERD): as an anti-inflammatory and spasmolytic Matricaria reduces symptoms, reduces inflammation and promotes healing. Matricaria acts as a gastrointestinal spasmolytic for other areas of the GI tract as well. For example, Matricaria decreases cramping associated with diarrhea and irritable bowel syndrome. The spasmolytic effect decreases intracolonic pressure, which along with other treatments prevents stagnation and further degeneration of the bowel wall.[1390] In a well-conducted randomized controlled trial, children (6 months to 5.5 years of age) with acute, non-complicated diarrhea received either a preparation containing apple pectin and chamomile extract or placebo. At the end of three days of treatment, the diarrhea had ended significantly ($p < 0.05$) more frequently in the pectin/chamomile than in the placebo group.[1391] A liquid extract of the flowers help[s prevent ulcer formation induced by ethyl alcohol, while the bisabolol inhibits ulcer formation caused by indomethacin in rats.[1392] As with Mentha, Matricaria can decrease gallbladder -associated spasm. *1393*
  - Respiratory System: Inflammations and irritation of the respiratory tract.[1394] The volatile components may be inhaled most effectively from steam allowing for deep and accurate penetration of medicinal agents to the whole respiratory system including the middle ear. Steam inhalation of Matricaria will clear congestion, soothe membranes, and reduce hypersensitivity reactions.[1395]
- Dermatological Conditions: skin and mucous membrane inflammations, eczema.[1396] In a partially double-blind, randomized study testing chamomile cream vs. 0.5% hydrocortisone cream in patients suffering from medium-degree atopic eczema, the chamomile cream showed a mild superiority over 0.5% hydrocortisone and placebo.[1397]
- Gynecologic Conditions: Outside of the G.I. tract, another application of the sedative effect is in the treatment of dysmenorrhea. In combination with Gelsemium, Matricaria relaxes the uterus, fallopian tubes, and ovaries and promotes the flow of menses.
- Inflammatory Conditions: Additionally, azulene decreases anaphylaxis (decreases IgE mediators), is anti-pyretic (inhibits hypothalamic regulatory center), and is anti-septic (particularly against Staph. and Strept, viruses, and fungi). The volatile oils bind, and thereby decrease, toxins, especially those caused by Staph. and Strept. Matricaria is therefore useful in the treatment of IBS and colitis (for its anti-spasmodic, anti-ulcer, and nervine effects).
  - Topical Applications: Matricaria increases granulation tissue (helps in wound healing). Externally, Matricaria is useful in poultices for external ulcers (to increase granulation tissue), for mastitis (anti-inflammatory), and for hemorrhoids (anti-

inflammatory). Because the azulenes are released with distillation, a steam inhalation of Matricaria is an excellent treatment for asthma and U.R.I.s. Likewise, using Matricaria in the bath is an ideal way to treat asthma, colds, eczema, hayfever, and generalized stress. Matricaria preparations are widely used in Europe for the treatment of a variety of common skin complaints including psoriasis, eczema and dry, flaky, irritated skin in general.

Pharmacy:

- Dosage:
  - Matricaria is best dosed on the low end of its dosage range over a long period of time. [1398]
  - 3 g flowers TID-QID ic.[1399]
- Capsules:
  - 350-700 mg (1-2 OO caps) TID. [1400]
- Solid extract:
  - sig 1/4 tsp TID.[1401]
- Tincture:
  - 1:5 tincture: 15 ml TID-QID,[1402]
  - 1:5 50% EtOH: 7-14 ml QD.[1403]
  - 1:5 45% EtOH; sig. 1-4 ml TID; max. weekly dose 100 ml.[1404]
- Infusion:
  - To obtain the azulene, steep the flowers covered for 3-5 minutes 1-2 tsp./cup water; sig 1 cup TID [1 tsp. - 1 g; 1 TB - 2.5 g].[1405]
  - Light tea- sweet (good for ulcers). Strong tea (steeped longer) and cool tea- bitter (good for G.I. conditions). Hot tea will be dispersed throughout the body. [1406]
  - For external use: 2 dessert spoons/1½ cup boiling water. Infuse 15 min, strain. [1407]
  - For internal use: 3 g/150 ml boiling water, cover x 15 min, strain. (1tsp=1g). Single daily dose is 3 g. 1 cup TID-QID. [1408]
  - 3 g /150 ml water, TID or QID – for gastrointestinal complaints.[1409]
  - 2-4 g flowers TID.[1410]
- Liquid extract:
  - 1:4 liquid extract: 1-4 ml TID-QID[1411]
  - 1:1fluid extract: 3 ml TID-QID. [1412]
  - 1:1 45% EtOH; sig. 1-3 ml TID.[1413]
  - 1:2 liquid extract: 3-5 ml QD. [1414]
- External:
  - Bath: 50g/1 L water or 6g/steam bath,[1415] 50g/10 L (~2½ gallons) hot water. [1416]
  - Washes and gargles: several times a day.[1417]
  - Inhalation of steam vapor of hot aqueous infusion for inflammation of the upper respiratory tract. [1418]
  - Poultice: semi-solid paste or plaster with 3-10% of flower head.[1419]
  - Rinse: hot aqueous rinse with 3-10% infusion. [1420]

Contraindications:

- Pregnancy: Matricaria is a smooth muscle relaxant and therefore may cause miscarriage in pregnant women, especially before 12 weeks.[1421] Empirical contraindications for large doses in early pregnancy due to the emmenagogue effect of the whole plant use in the eyes and allergic hypersensitivity.[1422]

Toxicity: none.[1423]

[1375] *PDR for Herbal Medicines*, 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p. 332

[1376] Ibid, pp. 331-2

[1377] Lininger et al, *Healthnotes*: *Clinical Essentials, Herb Monographs*, Prima Publishing, Rocklin, CA, 2001.

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[1384] Simon Mills, Kerry Bone, *Principles and Practice of Phytotherapy: Modern Herbal Medicine*, Churchill Livingstone, Edinburgh, 2000, p. 319.
[1385] *PDR*, p. 333
[1386] Harvey Wickes Felter and John Uri Lloyd, *King's American Dispensatory,* 18th ed., 3rd revision, Eclectic Medical Publications, Portland, 1983.
[1387] Felter.
[1388] Felter.
[1389] Blumenthal, p. 59.
[1390] Mills, pp. 319-327
[1391] "Double-blind comparison of an apple pectin-chamomile extract preparation with placebo in children with diarrhea," *Arzneimittelforschung,* 1997 Nov. Vol. 47, Num.11, pp. 1247-9.
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[1394] Blumenthal, p. 59
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[1397] "Proof of Efficacy of Kamillosan(R) Cream in Atopic Eczema," *Eur J Med Res*, 2000 Apr 19, Vol. 5, Num. 4, pp. 171-5.
[1398] Alschuler
[1399] Blumenthal, p.60
[1400] Alschuler
[1401] Ibid
[1402] Blumenthal, p.60
[1403] Mills, p. 320
[1404] Alschuler
[1405] Earlier Bastyr University monograph.
[1406] Ibid
[1407] *PDR*, p. 333
[1408] Ibid
[1409] Blumenthal, p. 60.
[1410] Mills, p. 320
[1411] *PDR*, p. 333
[1412] Blumenthal, p. 60.
[1413] Alschuler
[1414] Mills, p. 320
[1415] *PDR*, p. 333
[1416] Blumenthal, p. 60.
[1417] *PDR*, p. 333
[1418] Blumenthal, p. 60.
[1419] Ibid.
[1420] Ibid.
[1421] Earlier Bastyr University monograph.
[1422] Brinker, p. 53
[1423] Mills, p. 324

Medicago sativa

Leguminosae

Common name: alfalfa

Habitat: Native to the Mediterranean, cultivated widely

Botanical description: A perennial root with two stems. Leaves are alternate in three leaflets which are oblong and toothed. Flowers are purple with a 5 toothed calyx, the traditional Leguminosease flower. The pod is spirally coiled without spines.

Parts used: Herba

Constituents: alkaloids (aspragine, trigonelline); phytoestrogenic compounds (formometin, coumestrol); vitamins K, A, C and minerals Ca, K, Fe, Mg; saponins; coumarins, porphyrins, flavonoids, trace minerals, proteins

Pharmacology:

Medicinal actions: nutritive tonic, phytoestrogen, anti-tumor

Medicinal use:
Medicago is a nutritious herb containing many minerals and vitamins and is often included in formulas for its nutritional value along with its tonifying influence. Medicago is most indicated when there is insufficient nutrition, a tendency toward emaciation, and accompanying organ weakness.

- Gynecologic Conditions: The isoflavones (flavonoids) are estrogenic and antibacterial (Gm.- bacteria)., and in addition, stimulates appetite and enhances overall nutrition. The action of Medicago on the reproductive system can be summarized as a restorative tonic. Medicago is phytoestrogenic and its action is to restore the strength and tone of the digestive, kidney, mammary, ovarian and uterine tissue.
- Gastrointestinal Conditions: Medicago promotes digestion, assimilation and appetite.
- Hepatobiliary Conditions: The porphyrins stimulate bile production and secretion. The saponins are anti-cholesterolemic by binding to cholesterol and bile salts. Medicago is often included in detoxification teas for its nutritional, alkalinizing and cleansing actions. Medicago tea can be drunk as a coffee substitute (combine with Taraxacum radix and Mentha piperita. Medicago is a good inclusion in formulas for the treatment of anemia and arthritis due to its high nutrient content, digestive, choleretic and cholagogue actions.
- Male Conditions: In men, Medicago will help ease prostatic hypertrophy by imparting nutrition and tone to the prostate.

According to the Textbook of Natural Medicine :

- Musculoskeletal Conditions: Botanicals containing phytoestrogens are commonly used in the treatment of osteoarthritis although increasing the phytoestrogen content of the diet may be a more effective means of increasing phytoestrogen intake.

Pharmacy: Infusion: 1 tsp./cup water; 1-2 cups TID
Include as part of a mineral building formula, infusing overnight to be sure to extract the mineral content (Dipasquale)
1:5 tincture 4-5 ml TID
Solid extract (6:1): 1/4-1/2 tsp. TID
for osteoarthritis: the equivalent of 5-10 g qd[1424]

Contraindications: Tonic herbs, in general, are contraindicated in very severe debility, especially if associated with immune or digestive collapse, renal or hepatic failure and in progressive cancer or strong regimens of chemotherapy.[1425]

Medicago sativa var. itlaica has demonstrated uterine stimulant action in animals due to the stachydrine content and its excessive use internally should be avoided in pregnancy.[1426]

Medicago increases the rate of metabolism of xenobiotics in the liver by increasing the activity of hepatic microsomal mixed-function oxidases.[5] Anticoagulant activity of warfarin could be reduced due to the high vitamin K content.[6]

Toxicity: Caution should be exercised in consumption of Medicago, particularly the sprouts, by patients with systemic lupus erythematosus due to potential exacerbation by L-canavanine as reported in a small number of cases.[1427]

[1424] Murray M, Pizzorno E. Textbook of Natural Medicine, 2nd ed.. Churchill Livingstone 1999 p. 1449

[1425] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 155

[1426] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 27

[1427] [5] [6] Brinker p. 28

Melaleuca alternifolia

Common name: Tea tree

Habitat:

Botanical description:

Part used: essential oil

Historical use:

Energetics:

Constituents:
The oil contains numerous chemicals known as terpenoids. Australian standards were established for the amount of one particular compound, terpinen-4-ol, which must make up at least 30% and preferably 40–50% of the oil for it to be medically useful. Another compound, cineole, should make up less than 15% and preferably 2.5% of the oil[1428].

Pharmacology:
The oil kills fungus and bacteria, including those resistant to some antibiotics.
Tea tree oil has demonstrated a number of antimicrobial effects even against antibiotic resistant Staph aureus[1429].

Medical actions: antimicrobial

Traditional Medicinal Uses: No information is available from the selected resources.

Current Medical Uses:
- Dermatologic Conditions: A double-blind study found 100% tea tree oil applied topically was as effective as the anti-fungal medicine clotrimazole for people with onychomycosis. Another double-blind study found that 10% tea tree oil cream was as effective as anti-fungal medicine at improving symptoms associated with foot fungus, though it was not more effective than placebo for eliminating foot fungus[1430].
- Infectious Conditions: A single blind study found that rinsing the mouth with 15 ml (1 tablespoon) tea tree oil solution QID effectively treated thrush in AIDS patients[1431].
  Preliminary studies suggest it could be useful for treating vaginal infections caused by candida or other organisms[1432].

Current Research Review:
- **Infectious diseases:**
  - **Staphylococcus aureus:[1433]**
    - Design: Randomized controlled clinical trial
    - Patients: Patients with methicillin-resistant Staphylococcus aureus
    - Therapy: 4% tea tree oil nasal ointment and 5% tea tree oil body wash.
    - Results: The tea tree oil combination appeared to perform better than the standard combination, although the difference was not statistically significant due to the small number of patients.
- **Dentistry:**
  - **Supragingival plaque:[1434]**
    - Design: Clinical trial
    - Patients: Eight subjects after professional teeth cleaning
    - Therapy: Rinse: water – week 1, chlohexidine – week 2, tea tree oil – week 3.
    - Results: Tea tree oil reduced neither the clinical parameters (plaque index and area) nor the vitality of the plaque flora significant. It was determined that a solution with tea tree oil, utilized as ordinary mouthwash, has no positive effect on the quantity or quality of supragingival plaque.
- **Dermatology:**
  - **Acne:[1435]**
    - Design: Single-blind, randomized controlled clinical trial

- Patients: One hundred twenty four patients with mild to moderate acne
- Therapy: 5% benzoyl peroxide or 5% tea-tree oil
- Results: Both therapies had a significant effect in ameliorating the patients' acne by reducing the number of inflamed and non-inflamed lesions (open and closed comedones), although the onset of action in the case of tea-tree oil was slower. Fewer side effects were experienced by patients treated with tea-tree oil.

- **Onychomicosis:**

  Study 1:[1436]
  - Design: Randomized double-blind placebo-controlled multicenter clinical trial
  - Patients: Sixty patients, 18-80 yo, with 6-36 months duration of toenail onychomycosis.
  - Therapy: 2% butenafine hydrochloride and 5% Malaleuca altenifolia oil in cream x 16 weeks
  - Results: 80% of patients using medicated cream were cured, as opposed to none in the placebo group.

  Study 2:[1437]
  - Design: Double-blind multicenter randomized controlled clinical trial
  - Patients: One hundred seventeen patients with distal subungual onychomycosis proven by culture.
  - Therapy: 1% clotrimazole (CL) solution or 100% tea tree (TT) oil BID x 6 months. Debridement at 0, 1, 3, and 6 months.
  - Results: The two treatment groups were comparable based on culture cure (CL = 11%, TT = 18%) and clinical assessment with partial or full resolution (CL = 61%, TT = 60%). Three months after finishing the therapy, ~1/2 of each group reported continued improvement or resolution.

- **Tinea pedis:**

  Study 1:[1438]
  - Design: Randomized placebo-controlled double-blind clinical trial
  - Patients: One hundred fifty eight patients with interdigital tinea pedis.
  - Therapy: 25% or 50% tea tree oil solution BID topically x 4 wks.
  - Results: There was a marked clinical response seen in 68% of the 50% tea tree oil group and 72% of the 25% tea tree oil group, compared to 39% in the placebo group. The mycological cure rate was 64% in the 50% tea tree oil group, compared to 31% in the placebo group. Four (3.8%) patients applying tea tree oil developed moderate to severe dermatitis that improved quickly on stopping the study medication.

  Study 2:[1439]
  - Design: Randomized double-blind controlled clinical trial.
  - Patients: One hundred four patients with tinea pedis
  - Therapy: 10% w/w tea tree oil cream or 1% tolnaftate.
  - Results: Significantly more tolnaftate-treated patients (85%) than tea tree oil (30%) and placebo-treated patients (21%) showed conversion to negative culture at the end of therapy; there was no statistically significant difference between tea tree oil and placebo groups. All three groups demonstrated improvement in clinical condition based on the four clinical parameters of scaling, inflammation, itching and burning. The tea tree oil group (24/37) and the tolnaftate group (19/33) showed significant improvement in clinical condition when compared to the placebo group (14/34). Tea tree oil cream (10% w/w) appears to reduce the symptomatology of tinea pedis as effectively as tolnaftate 1% but is no more effective than placebo in achieving a mycological cure.

Pharmacy:
topical application only

Contraindications and toxicity: No information is currently available from the selected resources.

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[1430] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

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Melilotus officinalis

Fabaceae

Common name: sweet clover

Habitat:

Botanical description:

Part used: herba

Historical use: Melilotus placed between woolen clothing, was used in Europe to guard against the ravages of the moth.

Constituents:

- coumarin (0.2-0.45 %) and its precursor melilotiside, substituted coumarins (umbelliferone, scopoletin)
- flavones, caffeic acid derivatives.[1440]

Pharmacology:[1441]

Spoiled Melilotus contains dicoumarol which is the first anticoagulant discovered from cows with 'sweet clover disease'. Properly dried Melilotus does not have anticoagulant activity under normal circumstances as coumarin is 1000 times less functional that dicoumarol. With use of properly prepared Melilotus the onset of blood coagulation is slowed but bleeding and prothrombin times are not altered.

Coumarin is antiedematous and anti-inflammatory by enhancing the breakdown of protein accumulation in the extracellular spaces by macrophages. Hence indication includes postoperative edema. Gradual removal of fibrotic tissue occurs as well. Thoracic duct and lymph flow are increased as well increasing lymphatic drainage.

In the vascular system coumarin causes constriction of the precapillary sphincters and dilation of arteriovenous junctions resulting in improved blood flow to injured tissue. Coumarin increases venous return and improves experimental thrombophlebitis.

Coumarin inhibits prostaglandin formation in a similar fashion to aspirin, decreases endothelemia and favorable affects myocardial ischemia.

Coumarin has been studied in prevention of early recurrence of malignant melanoma TNM stage 1B and 2 demonstrating reduced recurrence. Coumarin has been combined with cimetidine in experimental treatment of advanced melanoma and metastatic renal cell carcinoma with some success and no toxicity.

Medical actions: lymphatic, antiedematous, antiinflammatory, possibly antitumor and immune enhancing

Traditional Medicinal Uses:

Specific Indications and Uses: Idiopathic headaches; long-standing neuralgias; coldness, tenderness, lameness or marked soreness of parts; painful menstruation with lameness or sensation of cold; menstrual colic; ovarian neuralgia; colic with diarrhea and much flatus.

Even as early as the turn of the century, the medicinal properties of Melilotus were observed to chiefly be due to coumarin. Melilotus was considered for painful states, with coldness, and marked soreness or tenderness to the touch; rheumatic cases, showing marked lameness; and painful dysuria as well as the conditions described below.

- Neurological Conditions: Many observers have found it peculiarly effective in certain painful disorders, particularly long standing neuralgias associated with debility. It was thought to be adapted to idiopathic neuralgic headaches, and to neuralgic affections not depending upon reflex causes, although it has given good results in headaches arising from painful disorders of the stomach.

  Recurring neuralgia, especially from cold or fatigue, have been promptly relieved by small doses of the drug.
- Gynecological Conditions: Melilotus was considered "magically effective" in the treatment of ovarian neuralgia and in dysmenorrhea its beneficial effect is observed when lameness and soreness are prominent symptoms, particularly when the pain seems to follow the sciatic nerve.
- Gastrointestinal Conditions: Gastralgia, neuralgia of the stomach, and other abdominal viscera, have been promptly relieved by Melilotus, particularly when associated with coldness of the extremities.

Current Medical Uses:

- Cardiovascular Conditions: Indicated conditions which are supported by clinical trials include: lymphedema, venous insufficiency, hemorrhoids, varicose veins, episiotomy, post traumatic inflammation, filaritic lymphedema and elephantiasis, cancer (malignant melanoma, renal cell carcinoma, prostatic carcinoma) particularly to prevent metastasis.[1442] Through enhancement of lymphatic function Melilotus increases venous return and is beneficial in post-operative edema.

In an open clinical study, 21 patients with chronic upper arm lymphedema due to post-lymphadenectomy of the axilla for breast cancer received 400 mg of Melilotus containing 8 mg of coumarin daily for 6 months. The circumference of the upper arm at 3 and 6 months from treatment was measured and the symptoms and tolerability was evaluated through a questionnaire given to the patients at every clinical control. Some patients also received manual lymphatic drainage, a possible confounding factor. This study concluded that the cumarinic extract of Melilotus officinalis was effective in reducing lymphedema in 79% of the patients treated for a period of six months. [1443] An open-label study was performed on 76 patients for six-eight months with a combination of Coumarin (Tonka beans) 60 mg/daily + Gingko Biloba 40 mg/daily + Melilotus 40 mg/daily for the treatment of lymphedema of the lower limbs. The study concluded that this formula provided a very significant improvement in lymphedema (centimeter-aspect) both in functional symptoms (pain heaviness in affected limbs) and physical signs (edema, episodes of infection). Tolerance of long term treatment was good and the improvement was observed from the third month of treatment. [1444]

Melilotus reduces inflammatory and congestive edema by breaking down accumulated protein. It also increases venous return and improves lymph flow. Mills and Bone also extrapolate use for high protein edema (including burns), thrombophlebitis, reduction of vascular damage (i.e. endothelemia), prevention of ischemic heart disease and conditions requiring enhance peripheral mononuclear lymphocytic activity.

Many trials combining Melilotus and rutin have been conducted for venous insufficiency resulting in significant improvement with reducing in edema as well. IM injections have been utilized for this condition. Melilotus has been studied for venous insufficiency in pregnant women with success as well.

Pharmacy: dried or fresh herb
infusion
liquid extract
IM injection

The therapeutic dose of coumarin has been established at around 1mg/kg/day corresponding to about 10 ml qd of 1:2 fluid extract. Best results occur with 5-6 divided doses. Higher doses have been used. Melilotus may be used long term in this dosage range. Best results from coumarin therapy are obtained by using frequent low doses.

Combination: Herbs with vitamin P-like activity: Aesculus, Crataegus, Linden, Tilia and other herbs containing flavone glycosides.

Contraindication: Use precaution when prescribing with warfarin, salicylates and bromelain due to potential potentiation of hemorrhagic diathesis (theoretical).[1445]

Toxicity: No adverse effects within the recommended dosage. Coumarin has been associated with hepatotoxicity in rats and lung adenomas and carcinomas in mice. Thus, use is avoided in patients with impaired liver function or elevated liver enzymes.

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[1442] Mills, Simon and Bone, Kerry. Prinicples and Practice of Phytotherapy: Modern Herbal Medicine. Churchill-Livingstone 1999 p 483

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Melissa officinalis

Lamiaceae (Labiatae)

Common name: Lemon balm, Balm, Sweet balm, honey plant, balm mint, blue balm, common balm

Habitat: Melissa officinalis is native to Europe.

Botanical description: A square stem bears opposite leaves that are coarsely marked, ovate, wrinkled, coarsely serrate margin with a rounded base. Small white flowers appear in mid-summer. The plant produces a lemon-like odor.

Parts used: Herba

Constituents:

- Volatile oil (0.02%-0.3%): monoterpenes, primarily citral (>60%) sesquiterpenes (>35%) with over 70 components identified
- Flavonoids; Polyphenolic compounds; Triterpenic acids; Rosmarinic acid; Chlorogenic and caffeic acids, tannins (higher in leaves)

Medicinal actions: Carminative, Sedative, Diaphoretic, febrifuge, Anti-viral, Anti-thyroid, Choleretic, mild analgesic, antispasmodic

Pharmacology: The polyphenolic compounds possess choleretic actions. Citral induces the the activity or UDP glucuronosyltransferases, a component of phase 2 conjugation in the liver.[1446]

While still incompletely understood, it is presumed that the polyphenolic compounds react with viral and cell-membrane proteins. The result of this interaction is phenolic compounds occupying viral receptors thus preventing adsorption of the virus onto the cell membrane.[1447] This is particularly evident with the Herpes virus.[1448] Oxidation products of caffeic acid inhibit protein biosynthesis in vitro, which may account for the antiviral activity of topical application.[1449]

Animal studies demonstrate a decrease in thyrotropin levels with extract of Melissa officinalis.[1450] In mice, aqueous extracts of Melissa have sedative and peripheral analgesic activities.[1451]

The volatile oil inhibits the phasic contractions of the ileal muscle in vitro.[1452]

Traditional Medicinal Use:

King described Melissa as moderately stimulant, diaphoretic, and antispasmodic.

- Gynecological Conditions: Melissa was sometimes used to promote the menstruation as a warm infusion,
- Inflammatory Conditions: Melissa was used as a diaphoretic in febrile diseases. It was observed to favor the flow of sweat and urine and soothe the nerves. It was commonly applied in acute colds and an adjunct to less pleasant diaphoretics.

Current Medicinal Use:

Melissa has been in use throughout European history. It was used as a herb for longevity, memory, fertility, rheumatism, as a sedative and spasmolytic, and to create happiness.

- Endocrine Conditions: Currently, Melissa has diverse actions in the body. The hormonal effects of Melissa are similar to those of Lycopus virginicus. Melissa interferes with the binding of TSH to thyroid cell membrane receptors. Melissa also inhibits iodothyronine deiodinase and thus prevents the incorporation of iodine into thyroxine synthesis. These actions make Melissa useful in primary and secondary hyperthyroidism. Additionally, Melissa blocks the autoantibodies produced in Grave's disease and Hashimoto's from binding to the thyroid. Melissa is often the leading herb in formulas for Grave's disease. The sedative effects of Melissa may be due in part to the anti-thyroid effects. In addition, Melissa contains sedative volatile oils. These volatile oils and the polyphenolics are also anti-viral and carminative.
- Gastrointestinal Conditions: Volatile antispasmodics such as Melissa can be used for nervous dyspepsia, colic, flatulence, irritable bowel disease and gastritis. Hence, these herbs tend to overlap with the effect of aromatics. [1453]
- Nervous Conditions: As a sedative, Melissa is most indicated in a someone with symptoms typical of hyperthyroidism: anxiety, restlessness, palpitations, headache, and excitability. In addition, Melissa is a mild anti-depressant. The volatile oils act on the limbic system in such a way as to cause a lifting of depression and anxiety.

Melissa brings joy to the heart. Melissa is well-indicated in stress-induced migraine headaches, palpitations, and insomnia. The volatile oils in Melissa also mildly relax smooth muscle, thus giving Melissa indication in hypertension, intestinal colic, dysmenorrhea, etc. The carminative effects of Melissa combined with its sedative and anti-depressant actions make Melissa particularly useful in intestinal colic secondary to or associated with anxiety, stress or depression. Over all, Melissa is trophorestorative to the nervous system. Melissa and Lavendula officinalis are an excellent combination in the treatment of stress associated tension.

- Immune Conditions: The anti-viral and anti-cancer actions of Melissa are another important effects for immune application. The anti-viral

properties of Melissa are mainly due to the oxidation products of caffeic acid and its derivatives. Rosmarinic acid and other volatile oils in Melissa possess significant anti-viral actions as well, which may explain why hot water extracts are the strongest anti-viral non-processed preparation. Because of the herb's pleasant taste, Melissa is often added to teas used in the treatment of viral infections. A topical application of Melissa is effective against Herpes simplex type 1 and type 2 viruses. A pharmaceutical product of dried Melissa for external use against Herpes viruses is available as an ointment concentrated to 70:1. This ointment has been tested clinically in randomized, placebo-controlled, double blind studies. These studies demonstrate that the Melissa ointment applied two to four times daily to the affected areas of the skin results in shortened healing time and less scabbing.[1454] There is some evidence from studies done on rats that Melissa inhibits tumor cell division and may be a useful adjunctive treatment in some cancers.

- Inflammatory Conditions: Volatile antispasmodics can be used as a component of fever management strategies. In this regard this class is distinct from the aromatics as they are more appropriate in hot a febrile conditions although the latter group should not be discarded in such cases. Rather, a number of remedies may need to be used to find which is best suited. [1455]

Pharmacy:

Antispasmodics are best taken immediately before meals as their effect on the digestion is maximized form hot infusions. In general, long-term therapy is well tolerated. [1456]

dried herb: 2-4 g daily (powdered capsules)
infusion: 2-3 tsp. dried herba or 4-6 fresh leaves covered with just boiled water; drink 1 cup of this tea BID – prn
1:5 tincture: 2-6 ml TID of (maximum of 100 ml per week)
Topically: poultice, compress, 70:1 extract (Herpelieve): apply 2–4 times daily

Drug Interactions:

- Barbiturates: increases the hypnotic effect of pentobarbital and the narcotic effect hexobarbital (animal studies).[1457]

Contraindications:[1458]

- Benign prostatic hyperplasia: Citral increases the ventral epithelial and stromal growth and stimulates estrogen receptors (animals)
- Breast feeding: due to the antiprolactin and hormonal influences.
- Gastric and enteric poisoning: caution is advised in the application of volatile antispasmodics.[1459]
- Glaucoma: 2-5 mcg of citral (35-55% of the volatile component) can raise intraocular pressure (animal studies)
- Hypothyroidism: due to antithyrotropic effects (in vitro)
- Pregnancy: empirical emmenagoue effect (empirical) as well as antithyrotropic and antigonadotropic activity (in vitro, animals)

Toxicity: None known.

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[1455, 9, 10] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine.Churchill Livingstone,2000p.172

[1456]

[1457] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 130, 278

[1458] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p.130

[1459]

Mentha piperita/ M. spicata or M. viridis

Lamiaceae

Common name: peppermint (M. piperita), spearmint (M. spicata, M. viridis)

Habitat:[1460] (M. piperita)

- Common in Europe and the U.S., usually cultivated.

Botanical description:[1461] (M. piperita)

- Flower and Fruit: The flowers are false spikes with nuberous inconspicuous bracts. The calyx is tubular with a ring of hair. The corolla is violet, glabrous inside and has an almost even margin divided into 4 parts.
- Leaves, Stem, and Root: Perennial plant, 50-90 cm high. The usually branched stems are normally glabrous, but sometimes, they are gray-tomentose and are often tinged violet. The leaves are short-petioloed, oblong-ovate, and serrate. The plant has over- and underground runners.

Part used: leaves

Energetics:

Constituents: [1462]

- Volatile oil: chief components: menthol (35-45%), menthone (15-20%), menthyl acetate (3-5%), neomenthol (2.5-3.5%), Isomenthone (2-3%), menthofurane (2-7%), additionally including, among others, limonene, pulegone, alpha- and beta-pinene, trans-sabinene hydrate
- Caffeic acid: including, among others, rosmaric acid
- Flavonoids: apigenine-, diosmetin- and luteolin glycosides, free lipophile methoxylized flavone including, among others, xanthomicrol, gardenine D.

Pharmacology: Menthol causes muscle relaxation by a blockage of calcium influx into the myocyte.

Medicinal actions: Spasmolytic, carminative, cholagogue, cholaretic, antiemetic, antitussive, antimicrobial, sedative, diaphoretic. Topically: antiseptic, analgesic, antipruritic.[1463]

Traditional Medicinal Uses:

- Digestive disorders, respiratory disorders, headaches, and nervous disorders [1464]. Greeks and Romans crowned themselves with Peppermint at their feasts and adorned their tables with its sprays, and their cooks flavored both their sauces and their wines with its essence. It is mentioned in the Icelandic Pharmacopoeias of the thirteenth century, but only came into general use in the medicine of Western Europe about the middle of the eighteenth century, and then was first used in England [1465].
- Folk use: n/v, morning sickness, respiratory infections, dysmenorrhea, and colds. [1466]
- Mentha piperita:
    - Mentha piperita is a diffusive stimulant and relaxant.[1467]
    - Gastrointestinal Conditions: It is mostly used for flatlence and colic; but may be employed for other sudden pains and crampings through the abdomen. Most stomachs receive it greatly and it often allays vomiting. Yet, some people do not tolerate it, making the stimulating properties unobtainable in those with a sensitive stomach.[1468]
- Mentha viridis (spearmint):
    - Spearmint is largely relaxant and antispasmodic. Its soothing quality is reserved for a large variety acute and light cases. [1469] According to King, the carminative, antispasmodic, and stimulant properties of spearmint are somewhat inferior to those of peppermint; its principal employment is for its diuretic and febrifuge virtues. The oil is diuretic, stimulant, antispasmodic, and rubefacient, and is used externally in rheumatic and other pains. Specific indications and uses include Scanty secretion of urine with frequent desire to urinate; simple nausea. Dose, same as peppermint. [1470]
    - Gastroenterology: Spearmint is more soothing and acceptable to the stomach than peppermint. It is useful in allaying nausea and vomiting and relieving children's colic. But, it is not as strongly carminative as peppermint and thus is not as helpful in spasmodic conditions.[1471] Scudder considered Mentha Viridis not only as a stimulant, but as one of the most kindly of the aromatics, rarely rejected by the stomach. As a stimulant, it will furnish a cheap and pleasant vehicle for many medicines.[1472]

- Nervous System: Its action is quickly diffused throughout the nervous system, particularly influencing the peripheries.[1473]
- Genitourinary Conditions: It promotes a free discharge of the watery portions of the urine making it useful in recent suppressions of the urine.[1474] Scudder regarded it as one of the most certain of the vegetable diuretics, and employed it frequently for this purpose. "In suppression of urine in children, a teaspoonful of the tincture is added to two ounces of water, sweetened, and given freely. So certain is its action in childhood, that I rarely think of giving anything else, except in cases where there is great irritation of the nervous system, and then Gelseminum is added to it in the usual doses."[1475] According to King, the cold infusion is beneficial in high color, or scalding of urine, difficult micturition, etc.; it may be used alone or in combination with marshmallow root. In fact, it is one of the best of simple diuretics, and acts nicely with potassium acetate. A saturated tincture of the fresh herb with gin has been found serviceable in gonorrhoea, strangury, suppressed urine, gravel, and as a local application to painful hemorrhoids.[1476]
- Topical Applications: A liniment of spearmint was used for pain and neuralgia, particularly over the spine and large nerves.[1477]
- Inflammatory Conditions: As a febrifuge, it is superior to peppermint, and may be used freely in warm infusion.[1478]

- Mentha spicata:
  - Peppermint is a powerful diffusive stimulant, antispasmodic, carminative, stomachic, and weak anodyne. It undoubtedly possesses marked antiseptic properties. Specific indications and uses include gastrodynia, flatulent colic, and difficult digestion.[1479]
  - Gastrointestinal Conditions: Used in the treatment of hysteria, spasms or cramps of the stomach, to allay the griping of cathartics, to check nausea and vomiting, and to disguise the unpleasant taste of other medicines.[1480]

Current Medicinal uses:

- Gastroenterology: Leaf is used for spastic complaints of the gastrointestinal tract, the gallbladder and the bile duct, dyspepsia, flatulence, intestinal colic, biliary disorders, dyspepsia, gastritis, enteritis.[1481] Oil is used for spastic discomfort of the upper gastrointestinal tract and bile ducts, irritable colon (in enteric coated capsules), flatulence, IBS, indigestion, nausea, diarrhea.[1482]
  - IBS: Enteric-coated peppermint oil has shown benefit for people with irritable bowel syndrome (IBS) according to double-blind studies.[1483, 1484] One study found that combining peppermint and caraway oils in an enteric-coated tablet was superior to placebo for people with irritable bowel syndrome.[1485]
  - Colic: A tea of peppermint is a traditional therapy for colic in infants, and a double-blind study has confirmed its effectiveness.[1486] The tea used in this study contained mint and also licorice, Verbena, fennel, and lemon balm. Peppermint should be used with caution in infants.
  - Dyspepsia: Randomized controlled trials (RCTs) showed effectiveness for accelerating gastric emptying time, reducing symptoms of pain, nausea, belching, heartburn, flatulence, and bloating.[1487]
  - Liver and gallbladder complaints: Double blind studies support the use of peppermint for reducing the size of gallstones, lowering the cholesterol index of bile.[1488]
- External application: Oil is used in myalgia, neuralgia[1489]
  - Pain: When applied topically, it acts as a counterirritant and analgesic with the ability to reduce pain and improve blood flow to the affected area.[1490]
  - Headache: A study of topical peppermint oil applied to the temples of healthy volunteers (with or without eucalyptus oil) found that peppermint oil had a muscle-relaxing action and decreased tension. This may explain its usefulness in treating tension headaches.[1491] Peppermint oil alone reduced pain as well.
- Respiratory System: Catarrh of the respiratory tract, coughs, colds, sore throat.[1492]
- Dermatology: oil is used externally for pruritis, urticaria, and pain in irritable skin conditions.[1493]

Pharmacy:

Peppermint leaves:

- Dosage:
  - 3-6 g QD for infusion and extracts.[1494]
- Tincture:
  - 1:10 tincture: 5-16 g qd.[1495]
  - 1:5 tincture: 10 ml BID-TID.[1496]
- Infusion:
  - 1 dessertspoonful/ 150ml hot water, strain after 10 min. 2-4 g QD, drink warm, slowly in sips.[1497]

- Tea: 1 cup TID-QID ic.[1498]
- 2 g/150 ml water, BID-TID. [1499]
- 1 dram per pint water: sig 1 T or less q 10-15 min for nausea (Spearmint).[1500]
- 2 drams herb per pint water: sig drink freely or combine with a small amount of Zingiber (Spearmint). [1501]

- Fluid extract:
  - 1:1 fluid extract: 1 ml BID-TID[1502]
- Standardized extract:
  - Dry normalized extract 3.5-4.5:1 (w/w): 0.44-0.57 g BID-TID. [1503]
- External application:
  - The fresh herb, bruised and applied over the bowels, will often allay sick stomach, and is efficient in cholera infantum. The same kind of application sometimes relieves headache.[1504]
  - Liniment combined with tincture of Lobelia and oil of Rosmarinus (Spearmint) [1505]

Peppermint oil:

- Internal dose:
  - 6-12 gtts/day.[1506]
  - For irritable colon: 0.6 ml/day; 0.2 ml as single dose in enteric-coated form.[1507]
  - Dissolve1 fluid drachm of the oil in 1 fluid ounce of alcohol. Dose, from 10 to 60 drops, in sweetened water.[1508]
- Inhalation:
  - 3-4 gtts/hot water.[1509]
  - Equal parts of the essence and alcohol, used by atomization, relieve the cough of bronchitis and pneumonia.[1510]
- External application:
  - Few gtts rubbed onto affected skin area BID-QID. [1511]
  - For young children: 5-15 gtts rubbed on the chest and back.[1512]

Contraindications:

- General: No health hazards are known in conjunction with the proper administration of designated therapeutic dosages. The intake can lead to gastric complaints in susceptible persons. The volatile oil possesses a weak potential for sensitization due to its menthol content. One is advised against administration of the drug in the presence of a tendency to gastroesophageal reflux.[1513]
- Pediatric Use: Preparations containing the oil should not be applied to the faces of infants or small children, particularly not in the nasal area (glottal spasm or bronchial spasm up to asthma-like attacks or even possible respiratory failure). [1514]

Toxicity: Cases of poisoning are not recorded. The minimal lethal dosage of menthol is estimated to be 2 gm, although individuals have survived higher dosages (8 to 9 gm). [1515]

[1460] *PDR for Herbal Medicines*, 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p. 580

[1461] Ibid.

[1462] PDR

[1463] Ibid

[1464] Simon Mills, Kerry Bone, *Principles and Practice of Phytotherapy: Modern Herbal Medicine*, Churchill Livingstone, Edinburgh, 2000, pp. 507-513.

[1465] Mrs M. Greive, *A Modern Herbal: The Medicinal, Culinary, Cosmetic and Economic Properties, Cultivation and Folklore of Herbs, Grasses, Fungi, Shrubs, & Trees with Their Modern Scientific Uses,* Dover Publications, Inc, New York, 1971, pp. 537-543

[1466] PDR, p. 580

[1467] WM., H., Cook, *Physiomedical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*, Eclectic Medical Publications, Portland, 1985, pp. 562-3

[1468] Ibid

[1469] Ibid

[1470] Harvey Wickes Felter and John Uri Lloyd, *King's American Dispensatory,* 18th ed., 3rd revision, Eclectic Medical Publications, Portland, 1983

[1471] Cook, pp. 562-3

[1472] John M. Scudder, *Specific Medication and Specific Medicines*, 15th ed., Eclectic Medical Publications, Sandy, OR, 1903.

[1473] Cook, pp. 562-3

[1474] Ibid

[1475] Scudder.

[1476] Felter.

[1477] Cook, pp. 562-3

[1478] Felter
[1479] Ibid
[1480] Ibid
[1481] Mark Blumenthal et al (eds), *Herbal Medicine: Expanded Commission E Monographs*, Integrative Medicine Communications, Newton, MA, 2000, p.300
[1482] Blumenthal, p. 301
[1483] W. Rees et al., "Treating Irritable Bowel Syndrome with Peppermint Oil," *BMJ*, 1979; ii, pp. 835–36.
[1484]M. H. Pittler, E. Ernst, "Peppermint Oil For Irritable Bowel Syndrome: A Critical Review and Metaanalysis," *Am J Gastroenterol,* 1998 Num. 93, pp.1131–35.
[1485] B. May et al., "Efficacy of a Fixed Peppermint/Caraway Oil Combination in Non-Ulcer Dyspepsia," *Arzneim Forsch Drug Res,* 1996, Vol. 46, pp. 1149–53.
[1486] Z. Weizman et al., "Efficacy of Herbal Tea Preparation in Infantile Colic," *J Pediatr,* 1993, Vol. 122, pp. 650–52.
[1487] Mills, pp. 507-513
[1488] Ibid
[1489] Blumenthal, p. 301
[1490] H. Göbel, et al., " Essential Plant Oils and Headache Mechanisms," *Phytomed,* 1995, Vol 2, pp. 93–102.
[1491] H. Göbel et al., "Effect of Peppermint and Eucalyptus Oil Preparations on Neurophysiological and Experimental Algesimetric Headache Parameters," *Cephalalgia,* 1994, Vol, 14, pp. 228–34.
[1492] Blumenthal, p. 301
[1493] Blumenthal, p. 301
[1494] Ibid, p. 300
[1495] PDR, p. 581
[1496] Blumenthal, p. 300
[1497] PDR, p. 581
[1498] Ibid
[1499] Blumenthal, p. 300
[1500] Cook.
[1501] Ibid
[1502] Blumenthal, p. 300
[1503] Ibid
[1504] Felter
[1505] Cook.
[1506] PDR, p. 581
[1507] Ibid
[1508] Felter
[1509] PDR, p. 581
[1510] Felter
[1511] PDR, p. 581
[1512] Ibid
[1513] PDR
[1514] Ibid
[1515] Ibid

Menyanthes trifoliata

Common name: Bogbean, buck bean

Habitat: Indigenous to Europe, Asia, and America.[1516] It is found in marshes, fens or bogs.[1517]

Botanical description: [1518]

- Flower and Fruit: White or reddish-white, medium sized flowers have many blossomed racemes on long leafless peduncle. There are 5 sepals. The corolla is fused with 5 tips and is pubescent inside. There are 5 reddish stamens and 1 superior ovary. The fruit is an ovate capsule.
- Leaves, Stem and Root: Perennial green, glabrous aquatic plant up to 15-30 cm high. It has small, finger-thick creeping rhizome. The decumbent stem varies in length according to conditions. Leaf sheaths surround the stem. The eaves are on long, fleshy, grooved petioles. They are trifoliate, 5 cm long, and 2.5 cm wide, and have obovate leaflets.

Part used:

- Leaves (best if collected between May and July).[1519]
- Herb.[1520]

Energetics: Very bitter, cold, dry, stimulating, sinking.[1521]

Constituents:[1522]

- Iridoid glycosides: foliamentin, dihydrogoliamenthin, mentiafolin, and loganin
- Pyridine alkaloids: gentianine
- Coumarins: scopoletin
- Phenolic acids: caffeic, protocatechuic, ferulic, sinapic, vanillic, others
- Misc: vit C, tannins, flavonoids (rutin), sterols, volatile oil.

Pharmacology: see the monograph of Gentiana for a description of the action of bitters.

Medicinal actions: Bitter, diuretic, cholagogue, anti-rheumatic,[1523] laxative in large doses,[1524] anti-hypertensive.[1525]

Traditional Medicinal Uses:

- Folk medicine, esp. in Europe: diseases of the digestive system and fevers.[1526]
- The Eclectics have given Menyanthes for intermittent and remittent fevers, chronic rheumatism, dyspepsia, hepatalgia, dropsy, worms, and some cutaneous diseases, and as a tonic in scrofula, and various cachectic affections.[1527] King considered Menyanthes as a valuable tonic where digestion and blood making are impaired, particularly when there is an associated uterine disease or irregularity, or when following the use of quinine in malarial disorders (Scudder).
- Physiomedicalist Cook described the root of buck-bean as relaxing and stimulating with the stimulating property predominating and of the tonifying character. He noted that its main influence is expended on the glandular structures, promoting the flow of bile and urine, acting fairly on the bowels and skin. The principle use is as a tonic in company with alterants for such maladies as dropsy, scrofula, jaundice and general biliousness. Cook used considerable doses to effectively purge the liver, gall bladder and bowels at the same time to sustain the strength and outward circulation. In regard to ague (malarial fever): Although not an antiperiodic as is Cinchona, Cook noted that Menyanthes sustains the liver, spleen and portal circulation to decided advantage in those cases where Cinchona causes too great cerebral excitement. [1528]

Chinese Medicine Prospective:[1529]

- Clears heat, damp and toxins, reduces fever and inflammation, removes lymph congestion, and stops vomiting.
- Stimulates digestion, promotes bile flow, removes accumulations, and relieves appetite loss, fatigue and constipation; clears parasites.
- Promotes urination, resolves toxicosis, relieves edema and benefits the skin; promotes menstruation and relieves amenorrhea
- Circulates lung Qi, promotes expectoration, resolves phlegm and relives wheezing.

Current Medicinal Uses:

- Inflammatory Conditions: Rheumatism (exc. where there is any colitis or diarrhea), arthritis, and rheumatoid arthritis.[1530] Bogbean has general antiinflammatory properties being useful as an adjunct in a formula, good in rheumatic conditions. [1531]
- Gastrointestinal Conditions: Sluggish digestion, indigestion, and problems of the liver and gall bladder.[1532]

Pharmacy:

- Dosage:
    - 1.5-3 g/day.[1533]
    - Larger doses – draining, smaller doses – stimulating to the digestion. [1534]
- Infusion:
    - 0.5-1 g finely cut herb/boiling water (or put this amount in cold water and bring rapidly to a boil). 1 tsp = 0.9 g. Steep 50-10 min, strain. Sig ½ cup ac.[1535]
    - 1-2 tsp dried herb/cup water, infuse 10-15 min; sig. 1 cup TID.
    - 6-10 g.[1536]
    - Tea: 1 cup qd in mouthful doses – for hypertension.[1537]
- Tincture:
    - Strength unspecified: 1-4 ml TID. [1538]
    - Strength unspecified: 1-3 ml.[1539]
- Powder:
    - 300-600 mg tid for tonic and gentle hepatic laxative properties.[1540]

Drug/Nutrient Interactions: None found in the references used.

Contraindications: Intestines (spleen) Qi deficiency presenting diarrhea.[1541]

Toxicity/Side Effects: In large quantities, it is emetic,[1542] particularly if fresh.[1543] May have irritant effect on the stomach.[1544]

[1516] *PDR for Herbal Medicines*, 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p. 110

[1517] Rudolf Fritz Weiss, *Weiss's Herbal Medicine,* classic ed., Thieme, Stuttgart, 2001, p. 42

[1518] Ibid.

[1519] David Hoffman, *The New Holistic Herbal: A Herbal Celebrating the Wholeness of Life*, 3rd ed., Element, Shaftesbury, Dorset, 1990, p. 184.

[1520] R. C. Wren, *Potter's Encyclopedia of Botanical Drugs and Preparations,* The C. W. Daniel Company Limited, Saffron Walden, England, 1985, p. 46.

[1521] Peter Holmes, *The Energetics of Western Herbs: A Materia Medica Integrating Western and Oriental Herbal Medicine Traditions,* rev. 2nd ed., Snow Lotus Press, Boulder, 1994, Vol. II, p.621.

[1522] Wren, p. 46

[1523] Hoffman, p. 184.

[1524] Wren, p. 46

[1525] W. Mitchell, *Naturopahic Applications of the Botanical Remedies,* 2nd ed., 1983, p. 12

[1526] *PDR,* p. 110.

[1527] Harvey Wickes Felter and John Uri Lloyd, *King's American Dispensatory,* 18th ed., 3rd revision, Eclectic Medical Publications, Portland, 1983.

[1528] WM., H., Cook, *Physiomedical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*, Eclectic Medical Publications, Portland, 1985, pp. 564-5

[1529] Holmes, Vol. II, p. 622

[1530] Hoffman, p. 184.

[1531] Simon Mills, Kerry Bone, *Principles and Practice of Phytotherapy: Modern Herbal Medicine*, Churchill Livingstone, Edinburgh, 2000, p. 149

[1532] Hoffman, p. 184.

[1533] *PDR*, p. 111

[1534] Holmes, Vol. II, p. 622

[1535] *PDR*, p. 111

[1536] Holmes, Vol. II, p. 622

[1537] Mitchell, p.12

[1538] Hoffman, p. 184.

[1539] Holmes, Vol. II, p. 622

[1540] Cook, p. 565

[1541] Holmes, Vol. II, p. 622

[1542] Cook, p.565

[1543] Felter.

[1544] Weiss, p. 43

Mitchella repens

Rubiaceae

Common name: Partridge Berry (Squaw Vine was a previously used name for this plant and is no longer used due to its offensive nature)

Habitat:

Botanical Description: An evergreen plant with a small, smooth, creeping stem. The leaves are 1/2 in long with white stripe, round-ovate on a short petiole, they are dark green and very tough. The flowers are 2 in number at the extremity of the stem, the corolla is white tinged with rose, and very fragrant. The fruits are berries, bright red and double in structure, with a stoney seed and a pleasant flavor.

Part Used: Herba

Historical Use: Mitchella was first used by the Native Americans, and its use has not yet been thoroughly scientifically investigated.

Constituents: tannins, saponins, bitter principle, alkaloids, mucilage

Medicinal actions: Parturient, Uterine tonic, Diuretic, emmenagogue

Medicinal use:

- Gynecologic Conditions: Mitchella tonifies the uterus gently over a long period (greater than 3 cycles). Unlike Rubus idaeus, which tonifies the muscle layer of the uterus, Mitchella tonifies the mucous membrane layer. It is not technically astringent, but rather tonifies the mucous membranes, leading to decreased discharge when excessive.

Mitchella is mildly anti-spasmodic. It is part of Mother's cordial, which is an Eclectic mixture drunk by pregnant women during the last four weeks of pregnancy to prepare for labor. Mitchella exerts its tonifying and anti-spasmodic influences through the nervous system. Mitchella is the supreme partus preparator by both tonifying and conditioning the uterus and by allaying nervous/emotional anticipation of the mother. Mitchella may also prevent spontaneous abortions in women with a prior history.

In non-pregnant women, it is helpful in dysmenorrhea, PMS(especially with water retention), prolapsus, leukorrhea, and in regulating the menstrual cycle. It regulates uterine and ovarian dysfunction, increases circulation, allays congestion and irritation of the organs, and relaxes the nervous system. Mitchella can be thought of as soothing and strengthening to the uterus and ovaries.

- Nervous Conditions: Mitchella is useful systemically for chronic nervous weakness and irritability.
- Male Conditions: It is a useful agent for the treatment of spermatorrhea in men.

According to Mills and Bone:[1545]

- Gynecologic Conditions: Mitchella is traditionally considered an emmenagogue although the term has been popularly used to refer to herbs that regulate the menses in general and may not reliably indicate an emmenagogue effect. For birth preparation, Mitchella can be taken continuously after the first trimester, particularly in combination with Rubus idaeus.

According to Scudder:[1546]

- Gynecologic Conditions: Mitchella exerts a direct influence upon the reproductive apparatus of the female , giving tone and improving functional activity. It has been extensively used as a uterine tonic, to promote menstruation, to remove false pains and unpleasant sensations in the latter months of pregnancy, and has been thought to be a good preparative to labor, rendering the birth of the child easier, and less liable to accidents.

According to Cook:

This article is mildly stimulating and slightly relaxing, exerting its influence rather slowly but persistently and leaving a gentle but desirable tonic impression upon the frame. It influences the uterus, kidneys, testes and the entire nervous system as connected with the generative organs. On the mucous membranes it exerts a mild tonic influence, which slowly abates excessive mucous discharges.

- Genitourinary Conditions: It has been recommended in dropsy and gravel, but is only of secondary value. It maintains a fair secretion of urine and relieves aching in the back.
- Gynecologic Conditions: The greater portion of its power is expended upon the uterus where its action is tonic and moderately antispasmodic. The chief value set upon it is for its soothing and strengthening influence upon the uterus in hysteria, leukorrhea, prolapsus and rheumatic or nerualgic pains and chronic painful menstruation.

Used for several weeks before parturition it allays the uterine cramping incident to the latter period of gestation and so strengthens this organ as to make an easy labor much more probable.

- Male Conditions: It exerts a highly favorable influence over spermatorrhea, particularly in combination with the flowers of Althea, Celastus and Arctostaphylos.

- Nervous Conditions: Often overlooked indications include all forms of nervous feebleness and irritability of a chronic character.

According to King:

Partridgeberry is parturient, diuretic, and astringent. Used in dropsy, suppression of urine and diarrhoea, in decoction. It seems to have an especial affinity for the uterus, exerting a powerful tonic and alterative influence upon this organ, and has hence been found highly beneficial in many uterine derangements, as in amenorrhoea, some forms of dysmenorrhoea, menorrhagia, chronic congestion of the uterus, enfeebled uterine nervous system, etc. It is said that the Indian women drink a decoction of this plant for several weeks previous to their confinement, for the purpose of rendering parturition safe and easy. Similar virtues have been ascribed to it by competent physicians of our time. The remedy is peculiarly American, not being noticed or used by foreign practitioners.

The berries are a popular remedy for diarrhoea and dysuria.

Pharmacy: Scudder cautions against using plant material that may be too aged, instead suggesting preparations made from the green plant material.

Infusion- 1/2 tsp./cup water; sig 3-4 cups TID (Alschuler)
Dose of a strong decoction, from 2 to 4 fluid ounces, 2 or 3 times a day. (King)
Tincture 1:5 25% EtOH; sig 5-10 ml TID (Alschuler)
Fluid Extract 1:1 25% EtOH; sig 2-4 ml TID (Alschuler)
Prepare a tincture from the fresh plant, viij (8 oz.) to Alcohol 76º Oj (16 oz.) Dose from gtts. v. to ss. (Scudder)
As a douche in an infusion form (Alschuler)
Mother's Cordial: Mitchella[4], Chamaelirium[1], Caulophyllum[1], Viburnum[1]
Used as follows, partridgeberry is highly recommended as a cure for sore nipples: Take 2 ounces of the herb, fresh if possible, and make a strong decoction with a pint of water, then strain, and add as much good cream as there is liquid of the decoction. Boil the whole down to the consistence of a soft salve, and when cool, anoint the nipple with it every time the child is removed from the breast.

Contraindications: Emmenagogues may be contraindicated in pregnancy or where pregnancy is being attempted, although Mitchella appears safe for use after the first trimester .[1547]

Toxicity:

[1545] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 240

[1546] Scudder J. Specific Medications and Specific Medicines.

[1547] Mills and bone p 240, 246

Momordica charantia

Cucurbitaceae

Common name: Bitter melon, bitter gourd, balsam pear, karela

Habitat:

Botanical description: A green melon.

Parts used: Fruit *with seeds*, leaf and stem

Constituents:

- Polypeptide-p and other polypeptides;
- Glycosides
  - Charantin (mixture of two steroid glycosides)
  - Cucurbitane-type triterpene glycosides called goyaglycosides-a, -b, -c, -d, -e, -f, -g, and –h.
  - Five cucurbitane-type triterpene glycosides momordicosides A, C, F1, I, and K. [1548]
- Oleanane-type triterpene saponins termed goyasaponins I, II, and III

Pharmacology: The hypoglycemic activity is in the seed and fruit.

At least three different groups of constituents in bitter melon have been reported to have hypoglycemic (blood-sugar lowering) actions of potential benefit in diabetes mellitus. These include a mixture of steroidal saponins known as charantin, insulin-like peptides (including polypeptide-p) and alkaloids. It is still unclear which of these is most effective, or if all three work together.

Multiple controlled clinical studies have confirmed the benefit of bitter melon for people with diabetes. [1549] In-vitro studies demonstrate enhanced glucose uptake in muscle tissue, glycogen accumulation in muscle and hepatic tissue, but no effect on glucose uptake or triglyceride synthesis in adipose tissue.[1550] In-vitro experimentation with the fruit extract revealed that it inhibits glucose uptake by intestinal fragments.[1551]

The antidiabetic activity of Momordica charantia was investigated in mice with type 2 diabetes with hyperinsulinemia. The water extract of the fruit of Momordica charantia L. (MC) reduced the blood glucose these mice 3 weeks after oral administration ($p<0.01$) and also significantly lowered the serum insulin of these mice under similar conditions ($p<0.01$). However, MC did not affect the blood glucose in normal mice. MC-treated mice blood glucose significantly decreased in an insulin tolerance test. Moreover, the muscle content of facilitative glucose transporter isoform 4 (GLUT4) protein content in the plasma membrane fraction from muscle significantly increased in the orally MC-treated mice when compared with that of the controls ($p<0.01$). These results suggest that the antidiabetic effect of MC is derived, at least in part, from a decrease in insulin resistance because of the increase of GLUT4 protein content in the plasma membrane of the muscle. [1552] Polypeptide-p is insulinomimetic when administered subcutaneously to rodents and primates. In-vitro studies support this finding. Momordica seeds stimulate lipogenesis and inhibit corticotropin-induced lipolysis. The mechanism is thought to involve an interaction of these peptides with α-adrenergic or corticotropin receptors.[1553]

Charantin is another active constituent in the melon. Hypoglycemic activity was observed in animals after p.o. , i.p. and i.v. dosing, although the hypoglycemic effect is not so evident in hyperglycemic animals.[1554] Charantin is better extracted in alcohol.

Two proteins, known as alpha- and beta-momorcharin, inhibits HIV; however, this research has only been conducted *in vitro* and not in humans. [1555]

In traditional herbal medicine, bitter melon—and essentially all non-toxic, bitter-tasting herbs—is thought to stimulate digestive function and improve appetite. This has yet to be tested in human studies. Unknown compounds in bitter melon have shown antioxidant effects *in vitro*. [1556] Other actions investigated in animal models include: lipid lowering, prevention of skin cancer, anti-ulcer, antioxidant and antiviral effects.

Medicinal actions: anti-diabetic (hypoglycemic)

Traditional Medicinal Use: Momordica entered the western materia medica only recently as was not described or used by the Eclectic or Physiomedical physicians. The Chinese and Indians have used Momordica for many centuries in order to treat symptoms of diabetes.

Current Medicinal Use:

- Endocrine Conditions: Momordica has therapeutic potential for diabetic patients. Even though the glucose-lowering effects of Momordica in a diabetic person may not be pronounced it is still a worthwhile therapy. Momordica appears to enhance tissue uptake and metabolism of glucose. Additionally, it may prevent the absorption of glucose from the intestines. It insulinomimetic effects may allow for reduced dosages of insulin in insulin-dependent diabetics.

Research summaries according to Brinker: Consumption of 230g of the fried fruit daily for 8-11 weeks or 50ml of the fresh juice daily increased glucose tolerance in 9 diabetic patients. In another study, 13 of 18 newly diagnosed maturity onset diabetes had significant improvement in glucose tolerance in a 3 hour test after consuming a 100 ml juice. In another study, daily consumption of 100 ml aqueous extract of 100 gm boiled fruit or the equivalent amount reduced to powder for three weeks reduced serum glucose by 54% in the seven diabetics using the liquid extract compared to 25% reduction in the five patients using the powder.[1557]

Pharmacy: Juice the melon (including seeds) mix this with a favorite beverage and dilute with water.
Powder
Tincture (1:5): 5-10 ml tid

Drug Interactions:[1558]

- **Insulin:** dosage may need to be adjusted due to hypoglycemic effect (human)
- **Chlorpropamide:** consumption of the melon may have additive effects in reducing glucosuria (case report).

Contraindications: Momordica may be contraindicated for use during pregnancy due to potential emmenogogue and abortifacient effects (empirical).[1559]

Toxicity: A mildly toxic lectin occurs in the seeds and outer rind of fruits which is capable of interfering with protein synthesis in the intestinal wall.[1560]

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Myrica cerifera — Myricaceae

Common name: Bayberry, wax-myrtle, candle berry, waxberry

Habitat:

Botanical description: This plant is a branching shrub that grows to a height of 1 to 12 feet. The stems are covered with a grayish-bark. The leaves are glabrous, cuneate-lanceolate, petiolate, pale in color, shiny and resinous and approximately 2 in. long and 1/2 in. wide. The flowers appear in May. They are white and occur in clusters, each one enclosing a black kernel. The root is curved and covered with a thin, grayish, mottled epidermis with slight transverse fissures. The inner bark is reddish-brown.

Parts used: Bark of the root.

Constituents:[1561]

- Volatile oil (traces)
- Triterpenes (taraxerol and myricadiol)
- Flavonoids (myricitrin)
- Tannins: From the aerial parts of the Myrica epicatechin, gallocatechin, epigallocatechin, epigallocatechin-3-O-gallate, gallocatechin-(4 alpha-8)-epicatechin, gallocatechin-(4 alpha-8)-epigallocatechin, and gallocatechin-(4 alpha-8)-gallocatechin-(4 alpha-8)-gallocatechin (1), were isolated. [1562]
- Resins, gums, phenols

Pharmacology:

The aqueous ethanol extract of Myrica Cortex (bark of Myrica rubra Sieb. et Zucc., Myricaceae) showed in vitro testosterone 5alpha-reductase inhibitory activity and in vivo anti-androgenic activity using growth of flank organ in castrated Syrian hamsters and/or hair regrowth after shaving in testosterone-treated C57Black/6CrSlc mice. Three constituents, myricanone, myricanol, and myricetin were identified as the main active principles. [1563]

Antioxidant and radical scavenging effects were studied of a diethyl ether extract of the fruit exudate of Myrica gale L., and of C-methylated dihydrochalcones isolated from it. Isolated hepatocytes and liver mitochondria from the rat were incubated with tertbutyl hydroperoxide, and lipid peroxidation measured by the yield of thiobarbituric acid reactive substances. The main antioxidant of the extract, myrigalone B (MyB), inhibited lipid peroxidation in hepatocytes with an IC50 value of 23 +/- 1 microM, whereas in mitochondria the value was 5.2 +/- 0.1 microM. [1564]

The inhibitory effect of a 50% ethanolic extract obtained from the dried leaves and the bark of Myrica rubra, was investigated in vitro on melanin biosynthesis which is closely related to hyperpigmentation. These extracts inhibited tyrosinase activity, which converts dopa to dopachrome in the biosynthetic process. Furthermore, the extracts inhibited the production of melanin from dopachrome by auto-oxidation and showed superoxide dismutase (SOD)-like activity. After bioassay-guided fractionation, quercetin, myricetin and myricetin 3-O-rhamnoside were isolated from the leaves. As they showed the inhibitory effect on tyrosinase activity, the activity is partially attributable to them in the extract of M. rubra. These results suggested that the leaves or the bark of M. rubra might be used as a whitening agent for the skin.[1565]

Bacteriostatic and fungistatic activity has also been reported.[1566]

Medicinal actions: Stimulant, astringent, diaphoretic

Traditional Medicinal Use:

Specific Indications and Uses: Profuse mucous flows; catarrhal states of the gastrointestinal tract; atonic diarrhea, typhoid dysentery, atony of the cutaneous circulation; full oppressed pulse. Locally and internally: sore mouth; spongy, flabby, bleeding gums; sore throat of scarlet fever when enfeebled and swollen.[1567]

It was largely employed by the followers of Samuel Thomson, in catarrhal states of the alimentary tract. King described Myrica as astringent and stimulant that was considered valuable in debilitated conditions of the mucous membranes. Cook noted that Myrica combines stimulating and astringing effects in about equal proportions that are definite and persistent in action. He observed that the entire circulation is slowly but steadily influenced with blood moving toward the surface of the body. Finally, he noted that it leaves an astringing tonic impression on all the tissues of the body. Indeed, it promotes an increase of mucous secretion in cases where these tissues are lax, and increases the salivary flow somewhat.

The bark has been successfully employed in scrofula, jaundice, diarrhoea, dysentery, aphthae, and other diseases where astringent stimulants were indicated.

- Endocrine Conditions: Some Physiomedicalists physicians used Myrica in cases of goiter.

- Gastrointestinal Conditions: The Eclectics used small doses of specific Myrica as a gastric stimulant for chronic gastritis, chronic catarrhal diarrhea, muco-enteritis, and in dysentery having a typhoid character. However, it was not considered adapted to acute disorders of the alimentary tract, as a rule. Cook noted that a warm infusion might be used in cramping diarrhea (but not dysentery) and hemorrhage from the bowels.
- Gynecological Conditions: A weak infusion used as an injection in amenorrhea and atonic leucorrhoea, followed by use of the specific medicine or tincture internally. Cook considered the warm infusion of Myrica valuable, either alone or in combination with suitable stimulants, in uterine hemorrhage. He also noted that Myrica unquestionably exerts a direct stimulating influence on the uterus, leading to its firm contraction in cases of labor where the circulation is sluggish and the tissue flaccid. In turn, he applied the cold infusion in chronic menorrhagia, and leucorrhea with prolapsus.
- Inflammatory Conditions: In warm infusion, Cook noted that Bayberry favors perspiration, followed by an increase of arterial and capillary firmness and a general tension of the tissues. Combined with relaxing diaphoretics, it may be used to advantage in recent colds and other cases of depression and laxity of the tissues.
- Pulmonary Conditions: Cook used the warm infusion in hemorrhage in the lungs.
- Topical Applications: The powdered bark, combined with Sanguinaria, was used as an application to indolent ulcers, and has been employed as a snuff for some forms of nasal polyps. The decoction was applied as a gargle in apthous sores, sore throat, as a gum wash for tender, spongy, and bleeding gums and an injection for fistulas.

Current Medicinal Use:
Myrica is most indicated in states of inflamed mucous membranes, which are also weakened (manifested by susceptibility to repeated states of congestion and/or ulceration).

- ENT Conditions: Myrica is used most often in colds and flues and sinusitis. It is a powerful astringent. In addition to reducing the copious exudate from inflamed mucous membranes, it also stimulates their overall function.
  Myrica is also a useful topical agent for pharyngitis and gingivitis. Myrica will most beneficial in these conditions when the tissue is swollen and tender and even friable. The tannins in Myrica will reduce the mucous accumulation and, in addition, will help to heal the ulcerations.
  Myrica is often used for nasal congestion, especially sinusitis. In addition to reducing the mucous secretion from the nasal mucosa, Myrica can help to resolve nasal polyps. Myrica is specifically indicated in sinusitis when the tissues are edematous. Myrica is effective in sinusitis as an internal and as a topical agent.
- Gastrointestinal Conditions: Myrica can also be used for gastroenteritis with excessive mucous secretion. The stimulating actions of Myrica will also stimulate digestive functions, especially gastric secretions. When the plant is used in specific dosages (2-5 drops) it will stimulate digestion.

Current Research Review:
Search of Medline revealed no human trials as of 11/20/02

Pharmacy: Powdered bark: 1-4 g TID
1:5 tincture: 3 ml TID; weekly maximum 60 ml
Specific tincture: 2 - 5 drops daily

Drug Interactions: No information is currently available from the selected resources.

Contraindications:
Cook noted that while its astringency is sufficiently felt by all the mucous membranes, this same quality contraindicates its use in any case where there is a tendency to deficient mucous secretion, such as the early stages of pneumonia, acute dysentery, etc.
Brinker contraindicates its use during severe acute inflammation due to its local stimulant properties (empirical).[1568]

Toxicity: The tannins and phenols extracted from the bark exert carcinogenic activity when injected into rats, however whether this effect is applicable to humans and in oral or topical administration is not known.

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Oenothera biennis

Onagraceae

Common name: Evening primrose, Tree primrose, Sun drop

Habitat:

Botanical description: Biennial plant with an erect, rough branching stem from 2 to 5 feet high. The leaves are ovate-lanceolate, alternate, 3-6 in. long and 1/2 to 1.5 in wide, those on the stem sessile, the radicles tapering into a petiole. The flowers are numerous, pale-yellow, sessile, odorous, in a terminal. The flowers are nocturnal and only bloom once and last for one day. The flowers contain numerous seeds.

Parts used: Leaves, oil from seed

Constituents:.
Fixed oil containing 70% cis-linolenic acid and 9% cis-ω-linolenic acid (GLA)
Triacylglycerols

Pharmacology: Gamma linoleic acid is involved in a variety of pathways through prostaglandin metabolism.

Medicinal actions: Oil: anti-inflammatory, nutritive, hypotensive, inhibitor of platelet aggregation
Leaves: Digestive restorative, anti-inflammatory

Traditional Medicinal Use: According to Scudder the specific indications for the leaves are: "Sallow, dirty skin, tissues full and expressionless, tongue unnatural in size and color, being large and of the dirty color of the skin, face dull and apathetic; dyspepsia, with vomiting of food, and gastric distress, with desire to urinate frequently; dysenteric discharges; nocturnal restlessness; innervation feeble; patient gloomy and despondent; atonic reproductive wrongs of the female, with pelvic fullness."[1569] The Eclectic physicians would prescribe evening primrose leaves for both gastrointestinal disorders and for pelvic weakness and stagnation in females.

Current Medicinal use: The oil from evening primrose is provides a substantial amount of GLA. This oil (particularly the GLA) is utilized in a number of conditions. Not all of the applications of GLA are warranted. Nonetheless, there are several indications which have been well studied.

- Behavioral and Psychological Conditions: Alcoholics may be deficient in prostaglandin E1 (PGE1) and in gamma-linolenic acid, a precursor to PGE1. In a double-blind study, supplementation with 4 grams of evening primrose oil per day (which contains gamma-linolenic acid) appeared to facilitate withdrawal from alcohol. [1570, 1571]
  A number of studies from England, Ireland, Scotland, Japan and the USA have demonstrated that these patients have low levels of EFAs. Randomized placebo-controlled trials have shown mild or no improvements. [1572]
- Cardiovascular Conditions: High dosages of evening primrose oil may be useful for Raynaud's phenomenon, a condition in which a person's hands and feet show abnormal sensitivity to cold temperature. A small double-blind study found that GLA produced significantly better results than placebo.[1573, 1574] Similar results have been obtained with the omega-3 fatty acids found in fish oil.
- Dermatologic Conditions: Evening primrose oil is very effective for treating atopic eczema[1575]. It is taken internally for this condition. This is a safe and effective treatment for infants as well as older children and adults. Researchers have reported that people with eczema do not have the normal ability to process fatty acids, which can result in a deficiency of gamma-linolenic acid. Most double-blind research has shown that EPO overcomes this block and is useful in the treatment of eczema. An analysis of nine placebo-controlled trials reported that effects for reduced itching were most striking. Much of the research uses 12 pills per day; each pill contains 500 mg of EPO, of which 45 mg is GLA. Smaller amounts have been shown to lack efficacy. One study questioned the effectiveness of evening primrose oil for treating eczema; however, this negative study has been criticized. [1576, 1577, 1578]
- Gastrointestinal Conditions: Oenethera leaves have been used for gastrointestinal disorders such as dyspepsia and/or hepatic insufficiency with vomiting, gastrointestinal distress after eating, restlessness at night, diarrhea with mucus in the stool.
- Gynecological Conditions: Evening primrose oil is also effective, when taken internally, for mastalgia.[1579] This effect is often noted by women who take evening primrose oil for their premenstrual syndrome symptoms.[1580] The alleviation of PMS symptoms including mood changes, breast tenderness, abdominal discomfort can be achieved by the administration of evening primrose oil. Evidence suggests that GLA relieves cyclic mastalgia, perhaps by restoring the balance of essential fatty acids. One review of multiple cases published in 1985 compared the effectiveness of four different therapies in women with severe, painful mastalgia: GLA from evening primrose oil and the pharmaceuticals danazol, bromocriptine, and progestins (often, but not quite accurately, called progesterone). The results suggest that evening primrose oil was effective in just under 50% of participants.

Another trial followed 73 women suffering from cyclic mastalgia. The results were consistent with the previous results, finding that evening primrose oil reduced pain in almost 50% of the women taking it, while only 19% of the women improved in the placebo group. Negative results were seen in a small placebo-controlled study of 23 women with established breast lumps. Participants who took evening primrose oil for 6 months showed no more improvement than individuals who received no treatment. [1581, 1582, 1583] Oenethera leaves have also been used in women with pelvic conditions such as uterine prolapse, ovarian cysts, oligomenorrhea, and incontinence.

- Metabolic Conditions: A 12-week double-blind study that enrolled 100 significantly overweight women compared the effectiveness of evening primrose oil to placebo. [1584] No difference was seen between the groups. However, there was a high dropout rate in this trial (over 25%), which somewhat decreases the meaningfulness of the results. In addition, many participants were known to have "refractory obesity," meaning that they had already failed to respond to other forms of treatment. Another double-blind trial tested the unusual hypothesis that evening primrose might only work in individuals with a family history of obesity. [1585] A total of 47 people with a family history of obesity were enrolled in this study. The results showed that use of evening primrose oil produced a small but significant loss of weight.
- Musculoskeletal Conditions: Oils containing the omega-6 fatty acid gamma linolenic acid (GLA), such as borage oil, black currant seed oil and evening primrose oil (EPO), have also been reported to be effective in the treatment of RA. The most pronounced effects were seen with borage oil; however, that may have been due to the larger amounts of GLA used (such as 1.4 grams per day). The results with EPO were conflicting and somewhat confusing, possibly because the placebo used in these studies (olive oil) appeared to have an anti-inflammatory effect of its own. In a double-blind study, positive results were seen when EPO was used in combination with fish oil. GLA appears to be effective because it is converted in part to prostaglandin E1, a compound known to have anti-inflammatory activity.
- In an unblinded trial for osteoporosis, women received 6 grams of a combination of evening primrose oil and fish oil (containing 60% linoleic acid, 8% gamma-linolenic acid [GLA], 4% eicosapentaenoic acid [EPA] and 3% docosahexaenoic acid [DHA]), or a matching placebo, in addition to a 600-mg calcium supplement, daily for 36 months. In the evening primrose oil/fish oil group there was no loss of spinal bone mineral density in the first 18 months, compared to a loss of 3.2% in the placebo group. During the second 18 months, those taking evening primrose oil/fish oil had a significant 3.1% increase in spinal bone mineral density. [1586, 1587]
- Neurological Conditions: There is some evidence that GLA can be helpful for diabetic neuropathy, if you give it long enough to work. In one double-blind placebo-controlled study, 111 people with mild diabetic neuropathy received either 480 mg daily of GLA or placebo. After 12 months, the group taking GLA was doing significantly better than the placebo group. Good results were seen in a smaller study as well. In addition, numerous studies in animals have found that evening primrose oil can protect nerves from diabetes-induced nerve injury. [1588, 1589, 1590]

According to KP Khalsa, GLA is beneficial in the management of Parkinson's disease.

Current Research Review (1990-2002):

- **Pulmonology:**
  - **Cystic fibrosis:**[1591]
    - Design: Clinical trial
    - Patients: Sixteen cystic fibrosis patients
    - Therapy: Evening primrose oil supplements (at least 72% linoleic and 7% gamma-linolenic acids, expressed as % fatty acid methyl esters) x 12 months.
    - Results: There were no significant changes in patients' weights or respiratory function throughout. Levels of plasma prostaglandins (PG) and urinary PG metabolites varied among individuals over a wide range, and urinary PGF2 alpha metabolites fell during the supplementation. There was a significant fall in sweat sodium concentrations after 6 weeks of supplementation, but sweat chloride was unchanged. It is not known whether the effect of essential fatty acids on sweat Na+ reflects changes in cell membrane conformation or if there is a direct effect on Na+ pump activity.
- **Immunology:**
  - **Sjorgren's syndrome:**[1592]
    - Design: Double-blind, placebo-controlled randomized clinical trial.
    - Patients: Ninety patients with primary Sjogren's syndrome with or without signs of autoimmunity.
    - Therapy: High dose GLA (from Evening Primrose Oil) or corn oil x 6 months.
    - Results: No statistically significant improvement was found in fatigue or time needed for sleeping/resting during a 24-hour period. No difference for eye and mouth dryness or pain, muscle or joint pain. According to this study, GLA treatment for fatigue in primary Sjogren's syndrome is ineffective.
- **Dermatology:**

- **Atopic dermatitis:**

  Study 1: [1593]
  - Design: Clinical trial
  - Patients: Forteen atopic dermatitis patients with itchy dry scaly skin.
  - Therapy: Evening primrose oil
  - Results: The extent of the skin lesions and the pruritis were reduced in all patients. Serum IFN-gamma levels were increased after the treatment up to those of the normal control group, serum IgE levels showed a significant decrease, failing to normalize completely. It was concluded that EPO could be highly effective in the treatment of a grossly non-inflammatory type of atopic dermatitis. The effect of EPO may be through the modulation of the immunological mechanism involving IFN-gamma.

  Study 2:[1594]
  - Design: Randomized controlled clinical trial.
  - Patients: Twenty patients with atopic dermatitis.
  - Therapy: Evening primrose oil in an anphiphilic and a stable water-in-oil emulsion x 4 wks.
  - Results: EPO was found to have a stabilizing effect on the stratum corneum barrier, but this was apparent only with the water-in-oil emulsion, not the emphiphilic emulsion.

  Study 3:[1595]
  - Design: Double-blind, placebo-controlled parallel clinical trial
  - Patients: Sixty children with atopic dermatitis and the need for regular treatment with topical skin steroids. Twenty two of these children had asthma.
  - Therapy: Epogam evening primrose oil x 16 wks.
  - Results: The plasma concentrations of essential fatty acids increased significantly in the group treated with Epogam capsules. The study demonstrated significant improvements of the eczema symptoms but no significant difference was found between the placebo and the Epogam groups. No therapeutic effect was shown on asthma symptoms or fidget.

  Study 4: [1596]
  - Design: Double blind, placebo-controlled clinical trial.
  - Patients: Children with atopic dermatits
  - Therapy: EPO (Epogam, Searle, UK)
  - Results: A significant improvemtn in the overall severity of the clinical condition, independent of whether the children had manifestations of IgE-mediated allergy. The percentage content of n-6 fatty acids in erythrocyte cell membrane increased, especially in the children treated with high doses of EPO. In the high dose group, dihomogamma-linolenic acid (precursor of antiinflammatory prostanoids) increased. Red cell membrane microviscosity did not change in any group after treatment with EPO, even in high doses, despite a significant increase in the proportion of long chain polyunsaturated fatty acids.

  Study 5: [1597]
  - Design: Double-blind, placebo-controlled, parallel-group clinical trial
  - Patients: One hundred twenty three patients with atopic dermatitis
  - Therapy: 1) EPO, 2) EPO + fish oil, or 3) placebo x 16 weeks
  - Results: No improvement with active treatment was demonstrated. This study found no effect of essential fatty acid supplementation in atopic dermatitis.

  Study 6:[1598]
  - Design: Randomized controlled clinical trial
  - Patients: Fifteen patients with atopic dermatitis.
  - Therapy: EPO, containing 72% linoleic acid and 10% gamma-linolenic acid; sig 4, 8, or 12 capsules containing 0.5 g oil.
  - Results: The only n-6 fatty acid showing a significant dose-related increase was dihomo-gamma-linolenic acid in neutrophil phospholipids. In both lesional and lesion-free epidermis, supplementation resulted in a rise in the ratio between n-6 and monounsaturated fatty acids, reaching significance in lesional epidermis. This study shows that moderate and favorable fatty acid changes can be obtained in the epidermis of AD patients, when given 6 g per day of oil rich in n-6 fatty acids.

- **Chronic hand dermatitis:**[1599]
  - Design: Double-blind placebo-controlled clinical trial
  - Patients: Thirty-nine patients with chronic (> 1year), stable hand dermatitis

- Therapy: Epogam (EPO); sig 600 mg GLA qd x 16 weeks
- Results: Improvement in clinical parameters was present in the Epogam and placebo groups, but no statistical difference could be confirmed between the groups. No change in the lipid composition of plasma red cells or epidermis could be detected during the trail. Ultrastructurally skin specimens showed no change during the study period. The study concluded that the therapeutic value of orally administered GLA for chronic hand dermatitis is not superior to that of placebo.

- **Gynecology:**
  - **PMS:**[1600]
    - Design: Randomized double-blind placebo-controlled cross-over clinical trial
    - Patients: Thirty-eight women with PMS.
    - Therapy: EPO (Efamol, Vita-Glow)
    - Results: Although the results showed an improvement in symptoms of PMS during the trial, no significant no significant differences in the scoring between the active and placebo groups were found over six cycles.
  - **Mastalgia:**

Study 1:[1601]
- Design: Prospective clinical trial.
- Patients: Sixty six Oriental women with disturbing cyclical mastalgia
- Therapy: Gamolenic acid in EPO (Efamast, Scotia Pharmaceuticals, Ltd, Scotia House, Stirling, Scotland).
- Results: an overall useful response rate of 97% was observed at 6 months. Side-effects were found in 12% but all were insignificant.

Study 2:[1602]
- Design: Controlled clinical trial
- Patients: One hundred seventy patients with mastalgia, mean age – 42, 87% nulliparous, 59% cyclical pain, 38% unilateral pain.
- Therapy: Vitamin B6, EPO, or danzol
- Results: Response rate to EPO was 26%, little better than placebo.

Study 3:[1603]
- Design: Randomized controlled clinical trial
- Patients: Women with mastalgia and breast cysts
- Therapy: EPO
- Results: Fatty acid profiles improved towards normal, but this was no necessarily associated with a clinical response.

  - **Breast cysts:**[1604]
    - Design: Randomized double-blind placebo-controlled clinical trial
    - Patients: Two hundred women with breast cysts proven by aspiration
    - Therapy: Efamol (EPO), 6 caps qd x 1 yr.
    - Results: Recurrent cyst formation in the first year was slightly but not significantly lower in the Efamol group. Initial electrolyte composition of cysts did not predict for cyst recurrence.
  - **Menopause:**[1605]
    - Design: Randomized double-blind placebo-controlled clinical trial
    - Patients: Fifty-six menopausal women suffering from hot flashes at least TID.
    - Therapy: Four caps BID of 500 mg EPO with 10 mg natural vit E or 500 mg liquid paraffin x 6 months
    - Results: Mean improvement in the number of flushes in the last available treatment cycle compared with the control cycle was 1.9 for daytime flushes and 0.7 for night time flushes in women taking placebo. The corresponding values for women taking gamolenic acid were 0.5 and 0.5. In women taking GLA the only significant improvement was a reduction in the maximum number of night time flushes. The authors concluded that gamolenic acid offers no benefit over placebo in treating menopausal flushing.
  - **Pregnancy:**[1606]
    - Design: Retrospective controlled clinical trial
    - Patients: One hundred eight women
    - Therapy: Evening primrose oil
    - Results: Oral administration of EPO from 37th gestational week until birth does no shorten gestation or decrease the overall length of labor. The use of orally administered EPO may actually be associated with an increase in the incidence of prolonged rupture of membranes, oxytocin augmentation, arrest of descent, and vacuum extraction.

- **Pediatrics:**
  - **Breastfeeding:**[1607]
    - Design: Placebo-controlled clinical trial.
    - Patients: Thirty-nine breastfeeding women
    - Therapy: Efamol (EPO) x 8 months starting between the 2nd and 6th months of lactation.
    - Results: Total fat and EFA contents of the milk declined in the placebo group but rose in the primrose oil supplemented group. The milk composition can be readily manipulated by changing the fatty acid composition of the maternal diet.
- **Urology:**
  - **Hemodialysis:**[1608]
    - Design: Randomized controlled double-blind clinical trial
    - Patients: Sixteen patients undergoing dialysis.
    - Therapy: GLA-rich EPO or linoleic acid; sig 2 g qd x 6 wks.
    - Results: The patients given EPO exhibited a significant increase in plasma dihomo-gamma-linolenic acid (a precursor of anti-inflammatory prostaglandin E1) with no concomitant change in plasma arachidonic acid (a precursor of pro-inflammatory prostaglandin E2 and leukotriene B4). In contrast, those given LA exhibited a significant increase in LA but not in any other n-6 EFAs, whereas they exhibited a significant decrease in plasma docosahexaenoic acid. The patients given EPO showed a significant improvement in the skin scores for the three different uremic skin symptoms over the baseline values and a trend toward a greater improvement in pruritus scores than those given LA.
- **Infectious diseases:**
  - **Hepatitis B:**[1609]
    - Design: Placebo-controlled clinical trial
    - Patients: Ten patients with serological and histological evidence of chronic hepatitis B.
    - Therapy: Polyunsaturated fatty acid-rich EPO capsules; sig 4 g qd x 12 month. Liquid paraffin capsules – placebo.
    - Results: Compared to the placebo group, the patients receiving evening primrose oil showed no improvement in either biochemical or histological indices of liver damage, or in the rate of loss of circulating e antigen. It was concluded that dietary supplementation with this dose of essential fatty acids is unlikely to be of benefit in chronic hepatitis B.
- **Gastroenterology:**
  - **Ulcerative colitis:**[1610]
    - Design: Randomized placebo-controlled clinical trial.
    - Patients: Forty three patients with stable ulcerative colitis
    - Therapy: MaxEPA, super evening primrose oil, or olive oil (placebo) x 6 months in addition to ongoing treatment
    - Results: Treatment with super evening primrose oil increased red-cell membrane concentrations of dihomogamma-linolenic acid (DGLA) by 40% at 6 months, while treatment with placebo reduced levels of DGLA and DHA at 6 months. Super evening primrose oil significantly improved stool consistency compared to MaxEPA and placebo at 6 months, and this difference was maintained 3 months after treatment was discontinued. There was however, no difference in stool frequency, rectal bleeding, disease relapse, sigmoidoscopic appearance or rectal histology in the three treatment groups.
- **Rheumatology:**
  - **Rheumatoid arthritis:**[1611]
    - Design: Double-blind placebo-controlled clinical trial
    - Patients: Forty patients with RA and upper GI lesions d/t NSAIDs.
    - Therapy: EPO, 6 g qd (GLA 540 mg qd) or placebo – olive oil, 6 g qd
    - Results: No patient stopped non-steroidal anti-inflammatory therapy but three patients in each group reduced their dose. Other results showed a significant reduction in morning stiffness with gamma-linolenic acid at 3 months and reduction in pain and articular index at 6 months with olive oil. The authors concluded that while gamma-linolenic acid may produce mild improvement in rheumatoid arthritis, olive oil may itself have unrecognized benefits.
- **Endocrinology:**[1612]
  - **IDDM:**
    - Design: Double-blind placebo-controlled clinical trial
    - Patients: Eleven children with insulin-dependent diabetes mellitus.

- Therapy: EPO capsules (45 mg GLA and 360 mg of linoleic acid); sig 2 caps qd x 4 months, then 4 caps qd x 4 months more.
- Results: After administration of 4 capsules daily the DGLA levels increased and PGE2 levels decreased significantly in the EPO compared with the placebo group. Neither fatty acid nor PGE2 and PGF2 alpha levels were altered by administration of 2 EPO capsules daily. The authors concluded that the altered essential fatty acid and PG metabolism in diabetes may be reversed by direct GLA supplementation.

- **Oncology:**
  - **Liver cancer:**[1613]
    - Design: Randomized double-blind placebo-controlled clinical trial.
    - Patients: Patients with primary liver cancer
    - Therapy: Evening Primrose Oil
    - Results: No statistically significant effect was observed on survival time or liver size. There was a statistical significant beneficial effect on Gamma Glutamyl transferase values as a measure of liver function. The large size of tumor and the low doses of GLA used in this trial probably explain the lack of significant effect on survival times.

Pharmacy: Oil: 250-750 (+) mg daily
Leaves: Tincture of fresh leaves: 1 - 15 drops daily (specific dosing)

Drug Interactions: [1614]

Oenethera oil may potentiate the epileptogneic property of phenothiazines.

Administration of gamma linoleic acid with tamoxifen resulted in a faster clinical response to tamoxifen in 38 patients with estrogen-dependent breast cancer. Kidney damage induced by cyclosporine was reduced by coadministration of 10mg/kd of EPO in rats.

Brinker speculates that anticoagulants may be potentiated due to decrease in plasma heparin-neutralizing activity and platelet aggregation inhibition associated with PGE_1 that is formed from metabolism of DGLA. EPO at doses of 3 g/day in 12 hyperlipidemic patients for 4 months decreased platelet aggregation by 45% and increased bleeding time by 40%.

Contraindications: One case report described seizures in a patient using evening primrose oil capsules along with Cimicifuga and Vitex for four months. Based on this information and the potentiation of phenothiazines, Brinker speculates that Oenethera be avoided in patients with epilepsy. Brinker also speculates that Oenethera be avoided in cases mania as it will increase PGE_1, a prostaglandin already in excess in this condition.[1615]

Toxicity: None reported.

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Oplopanax horridum

Araliacea

Common name:

Habitat: boggy, low areas in forests; grows outward in a circular pattern

Botanical description:

Part used: root bark

Historical use: Native Americans used Oplopanax for rheumatoid arthritis, tuberculosis and to ward off evil spirits.

Energetics: Invigorates and strengthens on a physical mental and spiritual level. Stimulates self defense and standing up for oneself, can use with rescue remedy (Debra Francis).

Constituents:

- Falcarinol 1: oil
- Falcarindiol 2: oil
- Oplopandiol 3: oil
- 9,17-Octadecadiene-12,14-diyne-1,11,16-triol, 1-ac-etate 4: oil *44*, 4962.
- Oplopandiol acetate 5: oil
- saponins, glycosides, tannins

Pharmacology: The glycosides are similar in function to those found in Panax.

A methanol extract of the inner bark of *Oplopanax horridus* exhibited antibacterial and antifungal activity. Extracts were also active against *Mycobac-terium tuberculosis* and *Mycobacterium avium*. [1] In addition, work by McCutcheon et al demonstrated that the inner bark has activity against respiratory synchitial virus. [2]

The extract has potent hypoglycemic properties. In 1938, a Prince Rupert physician reported:

> "Our attention was brought to this material through the examination by one of us of a surgical patient who on hospitalization, developed marked symptoms of diabetes. This person, it was learned, had kept in apparent good health for several years by oral doses of an infusion of this root bark, and is in fact still leading a normal life with the aid of this infusion." [3]

He used the extract with Belgium hares and noted that profound, hypoglycemic effect was repeatedly produced when a dose of 0.1 to 0.5 cc per pound was used, either orally or intramuscularly. Blood glucose levels were erratic with higher doses and no effect from lower levels. The hypoglycemic effect was more pronounced when an acetone precipitate was given. The acetone filtrate produced a moderate hyperglycemia. No toxic effects were proven, but test rabbits had more fatty degeneration of the liver than control animals. The use of this drug to enhance the ability of the shaman to enter his trance-like state may have been related to the hypoglycemic effect. The legend of the Shaman's increased strength after one week of only the extract for food, may be related to increasing tolerance to the hypoglycemic effects. [4]

Medicinal actions: anti-stress, adaptogen, vulnerary, antihypoglycemic, purgative

Adaptogens have three qualities:

- need to be *nontoxic* and relatively free of side effects↓
- *nonspecific* in action, increasing the resistance of the organism to physical, biological and chemical stressors
- *normalizing* action irrespective of the direction of pathology

Differentiating adaptogen and tonic adaptogens:
Adaptogens increase the ability to adapt to stress. In this regard there is overlap with tonification from the TCM perspective.
Tonics increase reserves and promote health.
Trophorestoratives tend to indicate a specified system of influence.

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Traditional Medicinal Uses:
The indigenous peoples of the northwest and Alaska have used Devil's club traditionally for centuries. Devil's Club is the common name for Fatsia horrida, (Opiopanax horrideum. Echinopanax horridium). The Tlingit call it "suxt". The family is Ginseng or Araliaceae. Other plants in the same family are English Ivy and Virginia Sarsaparilla. It is a flowering shrub that grows abundantly in the rain forests of S.E. Alaska and British Columbia.
Dr. Blaschke, a physician in Sitka in 1836, reported 25 plants used by the Tlingits for medicine Apparently, Devil's club is the only member of this pharmacopia to survive in common use today. [5]

Ever since the almost forgotten era of the un-recorded past when a Tlingit of the Kake tribe observed two bears attempting to soothe their battle wounds by chewing Devil's club root, the use of this plant has been extensive from Yakutat, Alaska, to Neah Bay, Washington. Aside from medical purposes, the Devil's club extract was used during the neophyte shaman's purification rites as the only nourishment for weeks. The whole stalk, complete with thorns, was used for whipping suspected practitioners of witchcraft. Before a whale or a seal hunting expedition the hunters bathed their bodies in the extract. The dried bark was mixed with red paint as a love charm. The stalk was whittled and hung on a fish line as a lure.
Ancient medicinal uses, which are probably not practiced now, included: body perfume; baby talc; emetic; regulation of puerperal menstruation; as a lactation suppressant, and for menstrual cramps.

Tlingit and Haida people make an infusion of bark or of the roots, after removing the hairy spines, and drink it for general strength, colds, chest pain following cold, arthritis, black eyes, gallstones, stomach ulcers, and constipation. Although tuberculosis was recently thought to respond to the extract, few people refuse hospitalization today.
Another ancient preparation in common use is made from the raw inner bark. The stalk is chewed and spit directly upon open wounds as an emergency analgesic measure. The bark may be laid in strips, inner side against the skin, to reduce the pain and swelling from a fracture
The dried, pulverized inner bark or roots are mixed with pitch from red cedar or spruce am applied directly to small abrasions of the skin Today many Tlingit fishing boats carry an ample supply. The pitch hardens and protects the wound from constant immersion. The pulverized inner bark can also be taken with olive or corn oil by the teaspoon for pain relief.

Current Medicinal Uses:

- Endocrine Conditions: : Oplopanax can be used to stablize diabetics but is used more commonly with hypoglycemia and may be used in the ongoing treatment of Syndrome X.

  According to Justice, [6] two persons had glucose tolerance tests before and after taking an extract of Oplopanax. One hundred grams of glucose in 250 ml. of water was given to a 72 year old Indian woman and a 32 year Caucasian man after 12 hours fast. The next day after a 12 hour fast the same dose of glucose was given plus 1.4 cc per Ib and 1.6 cc/lb of Devil's club extract, respectively. Blood glucose levels were determined by the Nelson-Somogyi method at the Mt. Edgecumbe hospital laboratory. The Indian woman was regularly drinking the extract prior to the tests. The Caucasian male had never taken the extract before. The Caucasian experienced diarrhea plus the effects of hypoglycemia. These results show variability of reactions, but do tend to confirm the animal experiments in the Caucasian subject.

  The results were: [blood glucose MGMS per 100 CC]

Indian female:	FASTING	1 HR	2 HR	3 HR
Without extract:	90	187	128	50
With extract:	69	202	132	88

Caucasian male:	FASTING	1 HR	2 HR	3HR
Without extract:	85	112 (1.5 hours)		82
With extract:	80	83	85	83

- Pulmonary Conditions: Mild expectorant for coughs.
- Topical Applications: external application for wounds.

Pharmacy: When harvesting the herb, just cut a small part of the rhizome between two above ground sections. The rhizomes on either side will continue to proliferate.

Drug Interactions: No information is currently available.

[5] Justice J. Use of Devil's club in Southeast Alaska. *Alaska Med.* 1966 Jun;8(2):36-9.

[6] Justice J. Use of Devil's club in Southeast Alaska. *Alaska Med.* 1966 Jun;8(2):36-9.

Contraindications: No information is currently available.

Toxicity: People who regularly drink the extract report that upon starting to take the brew, one may have diarrhea and feel very weak. Greater weakness is experienced if alcoholic beverages are taken concurrently. [7]

[7] Ibid

Panax ginseng and P. quinquefolius

Araliaceae

[much of this monograph is adapted from: Bone, K *Clinical Applications of Ayurvedic and Chinese Herbs*, (Queensland, Australia: Phytotherapy Press); 1996:34-42.]

Common name: Chinese or Korean ginseng (P. ginseng), American ginseng (P. quinquefolius)

Habitat: There are approximately 6 species of ginseng native to Asia and two species native to N. America. Panax ginseng is native to NE China, Korea and Russia. Panax quinquefolius is native to the N. central and NE parts of North America.

Botanical description: Panax spp. grow as perennial plants up to 2 feet tall. The plant has a crown of dark green leaves and pale yellowish-green flowers and small red berry-like fruit. The long tap roots intertwine with one another and have a shape suggestive of a human form.

Parts used: Root; harvested after at least 6 years of growth. When the root is sun-dried, white ginseng is produced. If the root is first steamed and then artificially dried and then sun-dried, red ginseng is produced.

Identified Constituents:

- Mixture of steroidal and triterpenoid Saponins:
    - ginsenosides (genosides); approximately 30 different ginsenosides have been identified (e.g. ginsenosides R_0, R_a, R_{b2}, etc.) present at 2-3% in fresh root; extracts usually contain 5-17% depending on the extraction method used. *The rootlets tend to have ginsenosides that are more stimulating.*
        - protopanaxatriols (Re, Rf, Rg1, Rf2): *The protopanaxatriols make P. ginseng are more stimulating and raise the levels of all neurotransmitters in the body except serotonin.*
        - protopanaxadiols (Rb1, Rb2, Rc, Rd): *The protopanaxadiols are more sedating, working on the HPA axis sparing cortisol and affecting the nervous system through secondary mechanisms of countering neurotransmitter depletion.*
    - panaxosides (panaxoside A, B, C, etc.)
- Polysaccharides (glycans): in *P. ginseng,* panaxans (A-U) in *P. quinquefolium*, quinquefolans (A, B, and C)
- Acetylenic compounds including polyacetylenic alcohols (panaxynol and panaxydol) and polyacetylenes (ginsenoynes A-K)
- Sesquiterpenes (B-elemene, panasinsanol A and B, ginsenol, etc.)
- Sterols; Vit. D group vitamins; Flavonoids; Amino acids

Medicinal actions: adaptogenic*, stimulant, tonic, hypoglycemic (glycans), immunomodulating (glycans), hepatoprotective, cancer preventative (inhibition of tumor growth and proliferation), circulation enhancer

*An adaptogen is a substance which:

-is innocuous and causes minimal disorders in the physiology of the organism

-has non-specific action

-has a normalizing action irrespective of the direction of the pathologic state

Ginseng increases the alarm reaction and prolongs the adaptation phase in Seyle's model.

Pharmacology: Both species of *Panax* will be discussed as one plant. American ginseng (*P. quinquefolius)* contains a greater ratio of –diols than in Asian ginseng (*P. ginseng)* and this causes the American ginseng to possess a slightly more sedating influence. Most of the medicinal action of Panax spp. has been attributed to the ginsenosides.

The –diol genosides are most active on the hypothalamic-pituitary-adrenal axis. These genosides stimulate the anterior pituitary to release ACTH in a non-stressed state thereby increasing overall alertness and well-being.[1616] In many animal experiments, Ginseng administration increases resistance to physical, chemical and biological stressors (i.e. damage from radiation is reduced).[1617] Ginseng improves the efficiency of the feedback control from the adrenal cortex to the hypothalamus and pituitary. This allows for quicker glucocorticoid output in times of stress and a faster drop after stress. Ginseng normalizes blood sugar in both hyperglycemic and hypoglycemic states.[1618]

Ginseng is anti-diuretic either by acting on the posterior pituitary or by increasing mineral corticoid synthesis.[1619]

Ginseng and its ginsenosides stimulate DNA, RNA, lipid and protein synthesis in hepatocytes, kidney cells and bone marrow in-vitro.[1620] Ginseng extract administered to rabbits increased red and white blood cells and hemoglobin levels.[1621] Ginseng administered to humans increases red blood cell count, blood oxygen, hemoglobin, cardiac output, endurance, muscle strength and aerobic performance.[1622] During exercise, ginseng raises blood glucose levels while lowering lactic acid, pyruvic acid and free fatty acid

levels.[1623] This is in part due to the fact that ginseng inhibits glycogen utilization in skeletal muscle during exercise. The exercising muscles instead metabolize the free fatty acids.

Ginseng protect against carbon tetrachloride and galactosamine toxicity. Ginseng enhances ethanol metabolism and blood alcohol clearance.[1624]

Ginseng enhances phagocytosis and non-specific immunity and increases NK cell and macrophage activity.[1625] Ginseng enhances antibody formation and increased interferon production.[1626] In mice, ginseng appears to inhibit the incidence and proliferation of tumors when the animals are exposed to carcinogens.[1627]

Red ginseng induces nitric oxide to a significantly greater extent than uncooked white ginseng. Thus, its supposed contraindication in hypertension is not founded.

The mental effects of ginseng have been well-studied. Overall, ginseng is stimulating, given that the –diols are sedative whereas the –triols are stimulatory.[1628] Panax raises the levels of all neurotransmitters except for serotonin.[1629] Panax has been shown in several studies with rats to enhance memory and to reduce anxiety.[1630]

Ginseng increases the production of gonadotropins in-vitro and in rats. When administered to male rats, their mating behavior increases. When given to ovarectomised rats, a strong estrogenic effect is seen.[1631]

Ginseng has significant effects on the heart. In a damaged heart, i.e. in heart failure, ginseng exerts cardiotonic action. Ginseng is anti-arrhythmic and protects the myocardium against ischemia-reperfusion damage.[1632]

Ginsenosides from red ginseng inhibit CYP 1A1, 2B1, 3A1, 2E1. Panax ginseng has been shown to induce glutathione S-transferase activity or its isotype levels in the liver as well as NADPH-quinone reductase activity or content in the liver. [1633]

Historical Use: *Panax ginseng* and *Panax quinquefolius* have been used in Asia for over 2,000 years. It has been used to enhance overall health, alertness and longevity. Ginseng is still used for these purposes and its mechanisms of action have been further clarified as outlined in the pharmacology section.

Traditional Medicinal Use:

Specific Indications and Uses: Nervous dyspepsia; mental and other forms of nervous exhaustion from overwork.

Both King and Cook described P. quinquefolium as a very mild tonic. Cook noted that it is somewhat aromatic and diffusive, principally relaxant and felt its actions to be too light to use in depressed cases. King classified it as a stimulant, but noted that continued use for some length of time is required for worthwhile effect to occur.

The Eclectics and Physiomedicalists observed that Panax that made its chief impression on the nervous system. As a soothing and nervine tonic, its use was indicated its used in simple forms of dyspepsia, loss of appetite, nervousness, hysteria, and similar cases of nervous sensitiveness with debility. The Eclectics specifically noted it is a very important remedy in nervous dyspepsia, and in mental exhaustion from overwork.

Current Medicinal Use: Ginseng is used to improve mental and physical stamina and performance. Ginseng improves mental functioning, loss of memory, slow cognition within one week and the effect continues for months after administration.[1634] This indication has prompted natural foods merchandisers to add ginseng to a number of products and to promote ginseng tablets and liquid extracts. *Panax spp.* can be used short-term to increase mental and physical performance or may be used long-term as a revitalizing tonic. However, it is important to know that excess use of *Panax spp.* can over stimulate the CNS and cause anxiety, agitation, insomnia, palpitations, hypertension, tremor, headaches, euphoria, decreased sexual function, diarrhea and skin eruptions. In other words, most of the therapeutic effects of ginseng are reversed when taken in doses that are too high.

- Cardiovascular Conditions: Ginseng should be considered for all heart failure patients. If cardiac surgery is to take place, ginseng may significantly reduce myocardial ischemic and reperfusion injuries during and after surgery. Also, ginseng may be helpful long term in these patients and in patients who recently suffered a myocardial infarction to increase cardiac tone and protect against further ischemia.
- Gynecological Conditions: In women, ginseng promotes an estrogenic effect. It has been studied as a therapy for menopausal symptoms. Controlled trials demonstrate that ginseng is effective in eliminating menopausal symptoms in a significant number of women.[1635] Not all women respond favorably to ginseng and may be too stimulating for some women.
- Immune Conditions: One of the other main indications for *Panax spp.* is as an adjuvant cancer therapy. Ginseng appears to enhance the body's resistance to chemotherapeutic drugs. Ginseng increases the white blood cell count and improves immune function in patients with various cancers who are receiving chemotherapy.[1636] Ginseng may also prevent cancer and this may be one of the reasons it has been used historically to promote longevity.
- Male Conditions: Ginseng is useful in treating male infertility. If a male's sperm count is low, ginseng can raise the count.
- Endocrine Conditions: For diabetes mellitus dosing is more time dependent than dose dependent (although one study demonstrated that at least 200 mg should be ingested). Dosage should be 40 minutes or more prior to eating in order to lower postprandial glucose.

Pharmacy: Use acute dose for 1-2 weeks then lower to a maintenance dose for a few months then take a month off and reevaluate.
0.5-3.0 gm/ day of dried root. [Preparation of the main and lateral roots (vs. root hairs) is preferred; a ginsenoside ratio of Rg1 to Rb1 of greater than 50% indicates the main and lateral roots have been used.]
standardized extract: (4-7% ginsenosides): 100-200 mg daily
1:5 tincture: 2-10 ml qd
1:2 tincture:
Take a 1 week vacation after every 3 weeks of use.

Drug Interactions:[1637]

- **Alcohol:** consumption of 3g/mg freeze dried hot water extract decreased post consumption levels of alcohol by an average of 35.2% in 14 individuals.
- **Amitriptyline, Lithium, Phenylzine** (MAO inhibitor): combination produced manic symptoms in human case reports, although the true identification of Panax was not established.
- **Amoxicillin and clavulanic acid**: combination w/ 100 mg Panax extract bid increased bacterial clearance from the lungs during acute attacks of chronic bronchitis more than the use of the medications alone.
- **Insulin:** (speculative) Panax may have a hypoglycemic effect requiring insulin dosage to be adjusted in diabetic patients.
- **Methamphetamine:** prior Panax administration reduced striatal dopaminergic depletion (animal) and 150mg/kg/day for 52 days increased adrenal dopamine levels with no change to NE; in hypothalamus, NE was increased, dopamine decreased. (animal)
- **Morphine:** Panax inhibits hyperactivity and postsynaptic dopamine receptor super sensitivity induced by morphine (animal).
- Panax has been shown to promote the blood-brain transmission of dl-phenylalanine.
- **Warfarin:** combination may reduce anticoagulant activity of warfarin (speculative case report). However, in vitro evidence demonstrates antiplatelet activity (panaxynol, ginsenosides). 2g/kd bid for 5 days produced no significant changes on oral warfarin pharmacokinetics when warfarin was given as a single dose or at a steady state for six days (animal).

Contraindications:[1638]

- Asthma, acute (speculative)
- Infections, acute (speculative), though Panax is often used to prevent infection.
- Hemorrhage (speculative), such as menorrhagia or excessive epistaxis, due to platelet aggregation inhibition.
- Hypertension: This supposed contraindication is based on one human case report of questionable quality. In a subsequent study, of Panax in HTN should a decline in 24-mean systolic pressure in 26 subjects after 8 weeks use.

Toxicity: ginseng abuse syndrome: heat signs, nose bleeds, tremors, HTN, insomnia, impaired sexual function; mastalgia, increased vaginal bleeding

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Parietaria officinalis/ P. diffusa

Labiatae

Common name: Pellitory-of-the-wall

Habitat:[1639] (P. officinalis) Native to Europe

Botanical description:[1640] (P. officinalis)

- Flower and Fruit: Small, green, sessile flowers grow in axillary racemes and bloom throughout the summer. The bracteoles are free and shorter than the calyx. The filaments of the stamens are joind and so elastic that when they are touched before the flower has opened, they uncoil from rolle-up position and distribute the pollen. The achaenes are black.
- Leaves, Stem, and Root: Perennial, heavily branched, bushy, and leafy plant up to 70 cm high. It has reddish hard stem and narrow petiolate, ovate-lanceolate or elliptical, long-acuminate leaves 2.5-5 cm long. The leaf stalk is shorter than the leaf blade. The stem and the undersurface of the leaf ribs are pubescent with short, soft hairs. The upper surface of the leaves is almost glabrous and the ribs sunken.

Parts used: Aerial parts

Constituents [1641]

- Flavonoids (kaempferol, quercetin, isorhamnetin)
- glucoproteins [allergens],
- bitter compound

Medicinal actions: diuretic, demulcent, anti-lithic,[1642] kidney trophorestorative

Current Medicinal Uses:

- Genitorurinary Conditions:
  - Parietaria is the "silybum of the kidneys". Any inflammatory condition of the urinary system would benefit from Parietaria. It is indicated in edema secondary to renal dysfunction..
  - Diuretic, demulcent, and laxative. Used for a variety of kidney disorders, including urinary tract infections (UTIs), pyelonephritis, renal pain, and kidney stones.[1643]
- Respiratory Conditions: Chronic coughs. [1644]
- Topical: burns and wounds. [1645]

Current Research Review:

Search of Medline revealed no human trials as of 1/15/03

Pharmacy:

- Infusion: 1-2 tsp dried herb/cup boiling water, infuse x 10-15 min. Sig 1 cup TID[1646]
- Tincture (strength unspecified): 2-4 ml TID[1647]

Drug interactions:

- No interactions are known to occur, and there is no known reason to expect a clinically significant interaction with pellitory-of-the-wall. [1648]

Contraindications/Toxicity/Side Effects:

[1639] *PDR for Herbal Medicines*, 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p.578

[1640] Ibid.

[1641] R.C. Wren, *Potter's New Cyclopedia of Botanical Drugs and Preparations*, Potter's limited, England. 1988.

[1642] David Hoffman, *The Holistic Herbal: A Herbal Celebrating the Wholeness of Life,* 3rd ed., Element, Shaftesburry, Dorset, 1990, p. 204

[1643] "Monograph: Pellitory-of-the Wall," Natural Medicine Database, April 19, 2002, <http://www.naturaldatabase.com/monograph.asp?mono_id=102&hilite=1>, April 21, 2002.

[1644] Ibid.

[1645] Ibid.

[1646] Hoffman, p. 221
[1647] Hoffman, p. 221
[1648] "Monograph: Pellitory-of-the Wall."

Passiflora incarnata

Passifloraceae

Common name: Passionflower, Maypop

Habitat: South America, East Indies, Southeast United States

Botanical description: A herbaceous climbing plant, growing up to 9 m in length, bearing ovate or cordate, palmately 3-lobed leaves. There are coiled axillary tendrils. The flowers have 3 bracts, a calyx with 5 sepals and a corolla with 5 white petals with white and purple filamentous appendages and 5 large stamens.

Parts used: flowering tops, leaves

Constituents:

- Flavonoids (up to 2.5%): in particular C-glycosylflavones, including among others isovitexin-2″-glucoside, schaftoside, isoschaftoside, isoorientin, isoorientin-2″-glucoside, vicenin-2, lucenin-2
    - coumarins(roots): umbelliferone, scopoletin
- Cyanogenic glycosides: gynocardine (less than 0.1%); Maltol; Harman and Harmoline alkaloids; Volatile oil (trace)

Pharmacology:

For many years, plant researchers believed that a group of harman alkaloids was the active constituents in Passionflower. Recent studies, however, have pointed to the flavonoids in passion flower as the primary constituents responsible for its relaxing and anti-anxiety effects.[2] European pharmacopoeias typically recommend passion flower products containing no less than 0.8% total flavonoids.

Animal studies have shown that Passiflora extracts have spasmolytic activity comparable to that of papaverine (a smooth muscle relaxant drug).[1649]

Passiflora extract binds to benzodiazepine and $GABA_{A\&B}$ receptors.[1650]

Medicinal actions: Anti-spasmodic, sedative, hypnotic, hypotensive, anodyne, anti-depressant, nervine relaxant

Traditional Medicinal Use:

Specific Indications and Uses: Irritation of brain and nervous system with atony; sleeplessness from overwork, worry, or from febrile excitement, and in the young and aged; neuralgic pains with debility; exhaustion from cerebral fullness, or from excitement; convulsive movements; infantile nervous irritation; nervous headache; tetanus; hysteria; oppressed breathing; cardiac palpitation from excitement or shock.[1651]

- Gastrointestinal Conditions: Passiflora has been used to check diarrhoea and dysentery.
- Nervous Conditions: The effect of Passiflora was observed to effect on the nervous system chiefly, finding a wide application in spasmodic disorders and as a rest-producing agent. Moderate doses were used as an antispasmodic and hypnotic. According to King, an atonic condition appeared to be the keynote to its selection. Scudder believed Passiflora improved sympathetic function, improving the circulation and nutrition, and suggested its use "in torpidity of the liver with hemorrhoids, and in congestion of ovaries and uterus."

The Eclectics considered Passiflora best adapted to debility, rather than does not act so well in sthenic conditions, although not contraindicated in such. (Sthenic conditions are those of heightened activity or force).

Passiflora was especially useful to allay restlessness and overcome wakefulness secondary to exhaustion, or the nervous excitement of debility. Passiflora was considered especially useful in the insomnia of infants and old people. It gives sleep to those who are laboring under the effects of mental worry or from mental overwork.

Nervous symptoms due to reflex sexual or menstrual disturbances, and the nervous irritability resulting from prolonged illness were also indications for Passiflora. The Eclectics employed it to allay the restlessness of typhoid fever. Although its action was observed to be slow, it was considered reliable.

Passiflora was also deemed a remedy for convulsive movements and spasm such as epilepsy, chorea, post-partum puerperal eclampsia (IV) and even for a small number of cases of tetanus. King applied it in full doses in epilepsy during the prodromal warning of an approaching attack. Passiflora was also praised for its control over spastic conditions in childhood, regardless of cause. Spasms, dependent upon meningeal inflammation, have been controlled with it. It appears not to be contraindicated in any form of spasm.

- Pain Conditions: Passiflora was also used as a remedy for pain, particularly of the neuralgic type. It was used to relieve neuralgic and spasmodic dysmenorrhea, rectal pain, cardiac pain, facial and other forms of neuralgia, many reflex painful conditions incident to pregnancy and menopause, and other forms of pain. Headache due to acute illness, nervousness, debility, or from cerebral congestion also indicated Passiflora. King noted that all such cases show marked atony of some part or function.
- Pulmonary Conditions: When whooping-cough is associated with convulsions, Passiflora has given relief, and in hysteria with spasmodic movements it is reputed equally successful.

- Topical Applications: The aqueous extract has been lauded as an application to burns, hemorrhoids, ulcerating carcinoma, painful ulcers, chancres, chancroid and dental carries.

Current Medicinal use:

Passiflora is well indicated in states of nervous tension and anxiety presenting as restless agitation and exhaustion with spasm. It has anti-spasmodic effects on smooth muscles making is especially useful for anxiety induced intestinal spasm (diarrhea), vascular constriction (hypertension), and bronchial constriction (asthmatic wheezing). It is also utilized in cardiovascular conditions with a nervous component such as hypertension and palpitation. Also, botanical sedatives, in general, may be applied in some cases of inflammatory conditions. [1652]

- Behavioral and Psychological Conditions: In a study of opiate addiction, a total of 65 opiates addicts were assigned randomly to treatment with Passiflora extract plus clonidine tablet or clonidine tablet plus placebo drop during a 14-day double-blind clinical trial. The fixed daily dose was 60 drops of Passiflora extract and a maximum daily dose of 0.8 mg of clonidine administered in three divided doses. Both protocols were equally effective in treating the physical symptoms of withdrawal syndromes. However, the Passiflora plus clonidine group showed a significant superiority over clonidine alone in the management of mental symptoms. These results suggested that Passiflora extract may be an effective adjuvant agent in the management of opiate withdrawal.[1653]
- Gastrointestinal Conditions: Passiflora can be utilized in gastrointestinal conditions with a nervous component such as dyspepsia and gastroesophageal reflux disease.
- Nervous Conditions: The use of Passiflora is indicated in irregular sleep patterns, including those associated with fatigue. It is especially useful for insomnia accompanied with or due to excessive muscular tension and spasm. Passiflora, along with other sedative botanicals, can be utilized in weaning off conventional sedative medications.

Passiflora works best to ease both restlessness and exhaustion from overwork and anxiety. Passiflora is a good herb for children and the elderly because it is so gentle. However, if used chronically, it can exert mild toxic effects due to the accumulation of alkaloids in the nerve and muscle tissue causing irritability of that tissue.

A study was performed on 36 outpatients diagnosed with generalized anxiety disorder (GAD). Patients were allocated in a random fashion: 18 to the Passiflora extract 45 drops/day plus placebo tablet group, and 18 to oxazepam 30 mg/day plus placebo drops for a 4-week trial. No significant difference was observed between the two protocols at the end of trial. On the other hand, significantly more problems relating to impairment of job performance were encountered with subjects on oxazepam. The results suggest that Passiflora extract is an effective drug for the management of generalized anxiety disorder, and the low incidence of impairment of job performance with Passiflora extract compared to oxazepam is an advantage. [1654]

Weiss suggests that Passiflora is unlikely to be effective on its own. Rather, it is a good supportive herb. This is because Passiflora acts very gently and slowly, and thus, if used singly, will not produce a dramatic effect. [1655] The European literature involving Passiflora recommends it primarily for anti-anxiety treatment; in this context, it is often combined with Valerian, lemon balm, and other herbs with sedative properties. [1656]

Pharmacy: If Passiflora is used long-term, a 1-2 day vacation for every 2 weeks of use should avoid this toxicity.

Infusion: 1 tsp. (approx. 2 g) per cup water; sig 1 cup BID-TID

1:5 Tincture; sig 1-3 ml TID; weekly max: 40 ml

Drug Interactions:[1657]

- Anticoagulant medications: Coumarins have been speculated to have anticoagulant potential, possibly having an additive effect with warfarin and other anticoagulant medications. However the coumarins umbelliferone and scopoletin occur in the roots and both have failed to cause such an effect.
- Barbiturates: Passiflora potentiates sleeping time induced by pentobarbital and hexobarbital.
- Benzodiazepenes: Use of Passiflora helps with withdrawal from these drugs.

Contraindications:[1658]

- Depression (empirical) due to sedative effects.
- Pregnancy (speculative) due to the uterine stimulant properties of harmoline and harmine (animal studies) and the cyanogenic glycoside gynocardine.

Toxicity: Mild nerve and muscle irritation with long-term use. King observed that small doses may occasionally provoke emesis; some individuals appear to be very susceptible to this effect.[1659]

[1649] Karnig T., Kummer-Fustinioni G., Heydel B, *Sci. Pharm.*, 1983, 51:269.

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[1652] Mills, Simon and Bone, Kerry. Prinicples and Practice of Phytotherapy: Modern Herbal Medicine. Churchill-Livingstone 1999 p. 154, 175, 202, 204, 232-4

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[1655] Weiss, R.F. Herbal Medicine. Verlag GmbH, Stuttgart, 1996. p. 287

[1656] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

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Pausinystalia yohimbe (Corynanthe yohimbe) **Rubiaceae**

Common name: Yohimbe

Botanical description: The bark occurs comes from a tree that is native to the Cameroon Republic in Africa. The bark occurs in flat or slightly quilled pieces up to 75 cm long and 2 cm thick. The outer surface is grey-brown, cracked and fissured and often covered with lichen. The inner surface is reddish-brown and striated.

Parts used: Bark

Constituents: Indole alkaloids (yohimbine, alpha- and beta-yohimbane, pseudoyohimbine, coryantheine)

Pharamacolgy:
Yohimbine is an alpha-adrenergic blocker [Clark, J.R. et al., Science, 225:847] and thus may increase libido and cause lipolysis in the trunkal region. Alpha-adrenergic blocking agents interfere with the transmission of stimuli through pathways that normally allow sympathetic nervous excitatory stimulation. (Yohimbe, Aspidosperma)

Medicinal actions: Aphrodisiac, Lipolytic agent

Pharmacology: Yohimbine is the constituent that is considered to be the most active constituent. It is structurally similar to reserpine, and its medicinal effects are somewhat similar. Yohimbine is an alpha-2 adrenergic blocker and is therefore considered a sexual stimulant. In the penis, the $\alpha 2$ adrenoceptors are involved in non adrenergic/non cholinergic nerves by blocking release of nitric oxide release. Most studies confirm this mechanism and effect although a few studies fail to demonstrate this action.[1660] Yohimbe is

Medicinal use: *Pausinystalia yohimbe* is utilized for two primary purposes. The first is as a sexual stimulant. Yohimbine is an alpha-adrenergic blocking agent. Alpha-adrenergic blocking agents interfere with the transmission of stimuli through pathways that normally allow sympathetic nervous excitatory stimulation. In order for sexual arousal to occur, parasympathetic innervation needs to be predominant. In men with functional impotence (i.e. inability to obtain an erection). In men, *Pausinystalia yohimbe* results in increased libido and the ability to obtain a penile erection. In women, *Pausinystalia yohimbe* results in increased libido and increased vaginal lubrication. It is important not to use too much *Pausinystalia yohimbe* as it will lead to general depression.

The second clinical application of *Pausinystalia yohimbe* is as an adjuvant in weight loss. Yohimbine binds to alpha-2-adrenergic receptors found on the cell membranes of lipocytes, especially in the trunkal region. The binding of yohimbine to these receptors causes lipolysis. The fat reducing effect of *Pausinystalia yohimbe* is clinically significant and may be a helpful adjuvant to a weight loss program especially during the plateaus of weight loss.

Pharmacy: Liquid extract: 2-4 ml
5 mg Yohimbine-HCl (best dosed at the end of the day); over time increase to 5 mg TID.

Contraindications: Yohimbe may be contraindicated in both hypo and hypertension.

Toxicity/Contraindications: Avoid large and prolonged doses as: antidiuresis, increased blood pressure, tachycardia, irritability, tremor, sweating, nausea, vomiting and depression may result.

Contraindicated in persons with renal disorders, children, and pregnant women.

[1660] Clark JT, et al *Science,* 225:847.

Petroselinum crispum/ P. sativum(Apium petroselinum) **Umbelliferaceae**

Mills and Bone refer to the seed P. crispum and refer to the herb A. petroselinum.

Common name: Parsley

Parts Used: Leaf, stem, seeds, root.

Energetics:[1661] Bitter, pungent, neutral, dry

Constituents:[1662]

- Seeds: volatile oil 2%-7% (apiol, myristicin, terpenes), fixed oil (20%)
- Whole plant: flavonoids (apiin, furanocoumarins), vitamins (vitamin C, vitamin K), minerals (calcium, magnesium, potassium, iron)

Pharmacology:

- The mechanism of action of parsley seems to be mediated through an inhibition of the Na(+)-K(+) pump that would lead to a reduction in Na(+) and K(+) reabsorption leading thus to an osmotic water flow into the lumen, and diuresis.[1663]
- The methanolic extract from the aerial parts of Petroselinum crispum showed potent estrogenic activity in estrogen-sensitive breast cancer cell line, which was equal to that of isoflavone glycosides from soybean. The estrogenic activities of these flavones are nearly equal to those of the isoflavones, daidzein (0.61 microM) and genistein (0.60 microM). The methanolic extract of parsley, apiin, and apigenin restored the uterus weight in ovariectomized mice when orally administered for consecutive 7 days. [1664]

Medicinal actions: Diuretic, Anti-inflammatory, Spasmolytic

Traditional Medicianal Uses:

Current Medical Uses:

Medicinal use:

- Genitourinary Condtions: Parsley acts similarly to, but more strongly, than celery seed. Like celery, parsley seed contains volatile oil. It is also high in Fe and Vit. C. It is used for weak bladder with incontinence, and combines well with *Equisteum spp.* for this purpose. Parsley is also anti-inflammatory, being especially indicated in cystitis secondary to allergies.
  Petroselinum is a strong renal stimulant and diuretic. The volatile oils and flavonoids stimulate the renal parenchyma thus initiate diuresis. It is indicated in nephritis, cystitis, urethritis.
- Gynecological Conditions: The seeds are so highly concentrated in apiol they can be toxic. Apiol exerts spasmolytic and oxytocic actions and parsley seeds can be used for dysmenorrhea and as an emmenagogue. Parsley seed extracts can induce abortions and women using it in large quantities have been known to suffer long-lasting nerve damage and paralysis, although these cases of paralysis may actually be due to contamination with tricresyl phosphate.
- Musculoskeletal Conditions: Parsley is useful for edema associated with arthritis.

According to the Textbook of Natural Medicine:[1665]

Parsely, as a food, can provide phytoestrogens to the diet.

According to Mills and Bone:[1666]

- Genitourinary Condtions: Parsely increases the excretion of urinary urates.
- Gastrointestinal Conditions: Parsley root is considered to have antispasmodic acitivity being indicated in nervous dyspepsia, colic and flatulence, gastritis and irritable bowel disease. These indications are more appropriate in hot and febrile conditions. (Given that the seed contains the volatile oil with this property, it seems safe to extrapolate this use to the seed as well)
- Nervous Conditions: Given the antispasmodic property, Parsley can be utilized in general nervou, irritable and anxious conditions.

According to Weiss:[1667]

- Genitourinary Condtions: Parsley seed is an excellent diuretic being indicated in cases where a strong stinulaus is necessary to encourage micturation. This effect is so strong that a case report discussed that anuria due to mercury poisoning was overcome with one cup of the infusion. Parsely root has diuretic properties, although much less than the seed and may be used as a supportive herb, when a milder effect is desired. (Parsley root may also improve the taste as it tends to be sweet.)

According to Ellingwood:[1668]

- Genitourinary Condtions: An infusion of parsley is indicated when the specific gravity of the urine is high and the urination painful and irritating to the mucous membranes. It is useful in gonorrhea, stangury and great irritation with heat or a scalding sensation on urination. It can be given during the inflammtory stage including cystitis and nephritis (contrary to other writers). it has also been given for edema with success.
- Gynecological Conditions: The volatile oils are beneficial for amenorrhea and dysmenorrhea.
- Inflammatory Conditions: Petroselinum will control excessive night sweats following protracted malaria.

Medicinal uses

No human studies were found. The German Commission E approves the use of Parsley root and herb preparations for flushing out the urinary tract and for preventing and treating kidney gravel.

Pharmacy: For the antispasmodic effect on the GI system, Parsely (and other spasmodics for that matter) should be taken just prior to meals.
1:5 tincture: 1-3 ml TID
Eat 1/2 cup fresh parsley / day
1 cup fresh juice drunk throughout the day
Infusion: 1-3 g / day [1 tsp. = 1.5g]
Volatile oil: for amenorrhea 5-6 minims in a capsule, 3-4 times daily for 6-8 days before the menstrual period.

Contraindications: Apium should not be used during inflammed conditions of the kidney as the volatile oil can be irritating to the renal epithelium.[1669] Given its vitamin K content, consumption of large quantities may affect prothrombin blocking anticoagulants.

Toxicity: The essential oil of A. petroselinum has been used as an abortifacient although Ellingwood states that it has no abortive influence.[16701671] The essential has been found to actually inhibit uterine contractions. Thus, the abortifacient action has been ascribed to general poisoning or gastrointestinal irritation, which is an uncertain and dangerous application.[1672] Consumption of the whole plant in sufficient quantities may have a photosensitizing effect due to the furanocoumarins, particularly when 8-methoxypsoralen is concurrently administered.[1673]

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[1667] Weiss, R.F. Herbal Medicine. Verlag GmbH, Stuttgart, 1996. p. 236-7

[1668] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 432-3

[1669] Brinker, F. Herb Contraindications and Drug Interactions, 2nd ed. Eclectic Medical Publications, Sandy Oregon 1998 p. 109

[1670] Brinker, F. Herb Contraindications and Drug Interactions, 2nd ed. Eclectic Medical Publications, Sandy Oregon 1998 p. 109

[1671] Ellingwood, P 433

[1672] Mills, Simon and Bone, Kerry. Prinicples and Practice of Phytotherapy: Modern Herbal Medicine. Churchill-Livingstone 1999 p. 30

[1673] Brinker, p. 147

Peumus boldo

Common name: Boldo

Current Research Review:

- **Gastroenterology:**
  - **Oro-cecal intestinal transit:**[1674]
    - Design: Placebo-controlled clinical trial
    - Patients: Twelve healthy volunteers
    - Therapy: 2.5 g dry boldo extract during 2 successive periods of 4 days.
    - Results: Oro-cecal transit time was larger after dry boldo extract administration compared to placebo (112.5 +/- 15.4 and 87 +/- 11.8 min respectively, paired t $p < 0.05$). It was concluded that dry boldo extract prolongs oro cecal transit time, being a possible explanation for its medicinal use.

Phyllanthus amarus or P. niruri

Euphorbiaceace

Common Name:

Botanical Description:

Habitat:

Parts used: Leaves, Herba

Historical Use: Phyllanthus is part of the Ayurvedic materia medica.

Constituents:

- lignans (phyllanthine and hypophyllanthine)
- alkaloids
- bioflavonoids (quercetin)
- repandusinic acid

Pharmacology:

The active constituent, repandusinic acid, has been shown to have anti-viral properties in-vitro, inhibiting HIV and HTLV-I replication and HIV reverse transciptase activity.[1675] Phyllanthus blocks DNA polymerase, the enzyme needed for the hepatitis B virus to reproduce. The species *P. urinaria* and *P. niruri* may work better than *P. amarus*.[1676] Phyllanthus has been shown to have mild hepatoprotective effects in in-vitro tests. A study using rats demonstrated a normalizing effect on fatty deposition in the liver after alcohol ingestion.

Phyllanthus has also been shown to inhibit angiotensin-converting enzyme.[1677]

Medicinal actions: Hepatoprotective, antiviral, hypoglycemic

Medicinal use:

The main indications for Phyllanthus are viral infections of the liver, diabetes, and jaundice 2º viral hepatitis. Phyllanthus combines well with Silybum.

- Cardiovascular Conditions: Patients with hypertension given Phyllanthus showed significant increases in 24 hour urinary volume.[1678]
- Endocrine Conditions: Phyllanthus has glucose-lowering effects and is a useful adjunct in the treatment of diabetes.
- Hepatobiliary Conditions: Phyllanthus is a So. Indian herb used in the treatment of jaundice. It has been studied by Western investigators since the mid 80's. Phyllanthus is effective at improving jaundice due to viral hepatitis.
  Several in-vitro studies have demonstrated inactivation of HBsAg by inhibiting DNA polymerase, which is required by the hepatitis B virus for its replication. An in-vivo study on woodchucks confirmed this activity. Human studies have both supported and refuted this claim. A study published in the Lancet used 600 mg/day of the leaf on carriers of hepatitis B virus.[1679] After15-20 days, 59% of the treated subjects had lost HBsAg compared to 4% of the placebo subjects. The HBsAg had not returned up to 9 mo. later. However, this effect is not as great in people who carry HBsAg and HBeAg which is actually a better indicator of replicating virus. Two subsequent studies did not demonstrate this effect on HBsAg, while one further study did. The variability in study results may stem from slightly different species being used, varying qualities of the herb and its preparation, and/or study design.

Current Research Review:

- **Infectious diseases:**
  - **Hepatitis B:**
    Study 1:[1680]
    - Design: Randomized controlled clinical trial
    - Patients: Fifty-five patients with chronic viral hepatitis B.
    - Therapy: Phyllanthus amarus compound (PA Co) x 3 months – experimental, domestic recombinant human interferon alpha-1b (IFN-alpha 1b) x 3 month – control.
    - Results: The total effective rate in the Phylanthus group was 83.3%, showing no significant difference from the control. The normalization rates of ALT, A/G, and SB in the experiment group were 73.3%, 80.0%, and 78.2% respectively, which were significantly higher than that in the control. The negative conversion rates of HBeAg and HBV-DNA in the experiment group were 42.3% and 47.8% , showing no significant difference from the control. The conclusion of the study was that PA Co has remarkable effect for chronic viral hepatitis B in recovery of liver function and inhibition of the replication of HBV.

Study 2:[1681]

- Design: Randomized placebo-controlled clinical trial
- Patients: Fifty-seven patients with acute viral hepatitis B.
- Therapy: Phyllanthus amarus plant capsule, 300 mg/cap, 3 caps TID. Placebo- antiacid powder.
- Results: Phyllanthus amarus powders did not significantly reduce the duration of jaundice in persons with virus B hepatitis.

Study 3:[1682]

- Design: Controlled clinical trial.
- Patients: One hundred twenty three patients with chronic hepatitis B.
- Therapy: 1) Phyllanthus amarus (L) extract from S.P. Thyagarajan, Madras, India; 2) Phyllanthus niruri (L) extract from Hainan Province in China, or 3) Phyllanthus urinaria (L) extract from Henan Province. Control group received no herbal therapy.
- Results: The patients receiving Phyllanthus urinaria (L) were both more likely to lose detectable hepatitis B e-antigen from their serum and more likely to seroconvert hepatitis B e-antibody status from negative to positive than were patients given either of the other two preparations. No patient changed status with respect to hepatitis B s-antigen.

Study 4:[1683]

- Design: Clinical trial
- Patients: Thirty asymptomatic carriers of hepatitis B surface antigen (HBsAg)
- Therapy: Phyllanthus amarus, 250-500 mg TID x 4-8 weeks
- Results: None of the 30 subjects cleared HBsAg. Conclusion of the study: Phyllanthus amarus is not effective in clearing HBsAg in asymptomatic carriers of the antigen.

Study 5:[1684]

- Design: Randomized placebo-controlled clinical trial
- Patients: Sixty-five adult asymptomatic chronic carriers of hepatitis B virus
- Therapy: Stage 1: Phyllanthus amarus, 600 mg qd x 30 days – experimental. Stage 2: P. amarus x 30 days more and P. amarus 1,200 mg qd x 30 days to placebo recipients in stage 1.
- Results: Stage 1: the conversion rate of HBsAg was 6% in the study group at day 30. Stage 2: the conversion was observed in 1 (5%) in the higher dose group. The results indicated that Phyllanthus amarus, whole plant except root, grown in the central part of Thailand, given at the studied dosage and duration, had a very minimal effect on eradication of HBsAg from Thai adult asymptomatic chronic carriers.

Study 6[1685]:

- Design: Clinical trial
- Patients: Hepatitis B virus carriers
- Therapy: P. amarus x 1 month
- Results: 60% of the carriers lost HBV during the observation period

Study 7:[1686]

- Design: Placebo-controlled clinical trial
- Patients: Sixty patients, carriers of hepatitis B.
- Therapy: Phyllanthus amarus x 30 days
- Results: Twenty-two of 37 (59%) treated patients had lost hepatitis B surface antigen when tested 15-20 days after the end of the treatment compared with only 1/23 (4%) of placebo-treated controls. Some subjects have been followed for up to 9 months. In no case has the surface antigen returned.

- **Cardiology:**
  - **Hypertension:**[1687]
    - Design:
    - Patients: Nine mild hypertensive patients (four of them also suffering from DM)
    - Therapy: P. amarus x 10 days.
    - Results: Significant increase in 24 hr urine volume, urine and serum Na levels was observed. A significant reduction in systolic blood pressure in non-diabetic hypertensives and female subjects was noted. Blood glucose was also significantly reduced in the treated group.

Pharmacy: Tincture 1:2; sig 0.3-2 ml TID (higher end of dosage scale for acute states)

Contraindications: According to Brinker, Phyllanthus niruri has a hypoglycemic effect.[1688]

Toxicity: No information is currently available

Phytolacca decandra [P. americana] — Phytolaccaeae

Common name: Poke, pokeweed, poke root

Habitat: North America, prefers "waste lands"

Botanical description: A perennial plant with a large succulent white root, which grows a stem to a height of 5-8 ft. The stem is 1 in. in diameter, smooth, green when young and reddish-green when mature. It is succulent and interrupted with half-circular shelves of pith. Leaves are alternate, petiolate, oblong, 4-6 in., smooth, thick and juicy. The flowers occur opposite the leaves in racemes, 4-6 in. long with 20 or more on each raceme. The calyx consists of 5 or more white sepals. The fruit is a flattened berry with ten furrows and ten seeds, dark purple when ripe in the fall.

Parts used: Root (medicinal), Young shoot (food), Fruit (cathartic, irritating)

Constituents: Alkaloids (phytolaccin, phytolaccanin), Sapogenin (phytolaccagenin), phytolaccic acid, resins, tannins
In young shoot only: beta-carotene, Fe, Vit. C, Ca

Medicinal actions: relaxant alterative, antirheumatic, mild anodyne, emetic, purgative, fungicide, parasiticide, lymphagogue

Traditional Medicinal Use:
Specific Indications and Uses: Pallid mucous membranes with ulceration; sore mouth with small blisters on tongue and mucous membrane of cheeks; sore lips, blanched, with separation of the epidermis; hard, painful, enlarged glands; mastitis; orchitis; parotitis; aphthae; soreness of mammary glands, with impaired respiration; faucial, tonsillar, or pharyngeal ulceration; pallid sore throat, with cough or respiratory difficulty; secretions of mouth give a white glaze to surface of mouth, especially in children; white pultaceous sloughs at corners of mouth or in the cheek; and diphtheritic deposits.[1689]

King observed that Phytolacca acts upon the skin and glandular structures, especially those of the buccal cavity, throat and reproductive system and very markedly upon the mammary glands. It further acts upon the fibrous and serous tissues, and mucous membranes of the digestive and urinary tracts. It is also one of our most useful remedies in asthenic hyperemia of the uterus, spleen, liver, and other organs. The drug is principally eliminated by the kidneys.

Cook described the berries of this plant as relaxant with a slow action. Although both the Eclectic and Physiomedical traditions used Phytolacca, the Eclectic array of applications were wider in scope and included the root, leaves and berries whereas the Physiomedicalists only applied the berry.

- Dermatologic Conditions: King observed that indolent action of the skin calls for it when associated with vitiated blood where the skin maybe inflamed, but does not itch because there is not enough activity. It was often indicated in chronic eczema, syphilitic eruptions, psoriasis, tinea capitis, favus, and varicose and other ulcers of the leg. He also noted that Phytolacca is valuable in the treatment of scabies.
- Gastrointestinal Conditions: King used Phytolacca for ulceration of the mucous crypts of the stomach and of Peyer's patches. He also described a strong decoction of the leaves as being of much benefit in hemorrhoids if injected into the rectum 2 or 3 times a day, and a fomentation of the leaves applied to the hemorrhoids.
- Genitourinary Conditions: The Eclectics have used Phytolacca in gonorrhea, copious enuresis, albuminuria, particularly if accompanied by edema.
- Gynecological Conditions: According to King, no other remedy equals Phytolacca in acute mastitis. If employed early it prevents suppuration, yet acts kindly even when the abscess has to be drained, where diluted specific Phytolacca may be injected into the cavity. The remedy should be administered internally, alternated with specific Aconite. Locally, specific Phytolacca and glycerin or the powdered root with water was applied when suppuration had not yet begun. King also observed that Phytolacca that ovaritis, sore nipples and mammary tenderness, and sensitiveness of the breasts during the menstrual period call for Phytolacca. Involution of the uterus, uterine and vaginal leucorrhoea, and some cases of membranous dysmenorrhea are cured by this agent.
- Immune Conditions: King considered Phytolacca a powerful alternative for some forms of dyscrasia.
- Lymphatic Conditions: Cook noted that the primary power of the berries is expended on glandular structures, mildly and persistently securing an improved flow of saliva, urine and perspiration as well as a freer action of the bowels. They make a valuable agent in glandular enlargements, especially those connected with a chaffy skin and costiveness.
  In diseases of the glandular structures, the Eclectics considered Phytolacca and Iris as their best components. Unlike iris, though, Phytolacca is best suited to hard, lymphatic enlargements and not for suppurative conditions of the glands. Parotitis is usually cured with Phytolacca and aconite. Metastasis of mumps to the testes, as well as orchitis, from other causes, indicate this drug. Lymphoma has been cured by it.
- Musculoskeletal Conditions: In chronic and sub-acute rheumatism, Cook stated that few agents exert so valuable and reliable a power. in those forms of rheumatism which affect the synovial and ligamentous membranes, the muscular sheaths, and other serous tissues.

- Ophthalmological Conditions: King observed that Phytolacca relieves conjunctival inflammation and gonorrhoeal and syphilitic sore eyes. In granular conjunctivitis, he used Phytolacca personally by bathing his eyes daily with a decoction of the root and applying it to the affected conjunctiva by means of a camel's hair pencil, at the same time administering the tincture of the recent root internally.
- Pulmonary Conditions: According to King, In diseases of the mouth and throat it was highly esteemed and was useful in acute and chronic mucous affections, as in tracheitis, laryngitis, influenza, catarrh, and especially in those affections where there is a tendency to the formation of false membrane, as in diphtheria.
  The conditions for which King specifically indicated Phytolacca had a pallid, somewhat leaden-colored tongue, with little coating that was slick and glutinous, if covered at all. The mucous membranes presented with whitish erosions, or vesicular patches. With these indications he employed Phytolacca in tonsillitis, follicular pharyngitis, stomatitis, aphthae, nursing sore mouth, or ordinary sore mouth, and syphilitic faucial ulcerations, taken internally and used locally as a gargle. He also found it beneficial in difficult respiration produced by bronchocele. Combined with Baptisia, he used it as a local wash all forms of nasal catarrh.
- Topical Applications: The Eclectics roasted the root in hot ashes until soft, and then mashed and applied it as a poultice in abscesses and tumors of various kinds. They also use the bruised leaves, applied locally, in indolent ulcers.

Current Medicinal Use: Phytolacca is softening and dissolving in its actions. It has a specific action on the lymphatic system decreasing inflammation and increasing lymphatic drainage. It is most indicated in cases of hard lymph nodes with pale mucous membranes. Phytolacca acts most specifically on the head, neck and breast lymphatics. Phytolacca stimulates and clears (drains) the lymph system. For this purpose, Phytolacca combines well with Commiphora, Echinacea, Gallium, and Iris.

- Endocrine Conditions: Phytolacca is also helpful for goiterous thyroid glands and hypothyroid in general. Phytolacca increases circulation through the thyroid and improves lymphatic flow through the thyroid.
- Genitourinary Conditions: Phytolacca is a great treatment for cystic kidneys.
- Gynecological Conditions: Phytolacca affects glandular tissue in general (ovaries, testes, mammary, thyroid, etc.) by increasing their secretions. Phytolacca is much indicated in mastitis, sore nipples, and cystic breast tissue. It can be applied topically and/or taken internally. For mastitis, 10 drops of Phytolacca should be taken every two hours for up to 18 hours and applications of dried Phytolacca root and potato (grated raw potato) and glycerin applied often. The fomentation helps to bring the inflammatory exudate to the skin.
- Infectious Conditions: Phytolacca is useful in inflammations of the upper respiratory tract (nasal, pharynx, larynx). It is particularly good in acute inflammation, i.e. mumps (internally and externally). Internally, Phytolacca mixed with Galium (another lymphagogue) and anti-virals i.e. Baptisia is good in cases of mumps. For the same condition, Phytolacca (1/2 oz) can be simmered with Verbascum (anti-inflammatory)(1oz), apple cider vinegar (1 pint), water (1/2 pint), Lobelia (1/2 oz), for 5-10 min. 1/2 tsp. capsicum is then added. This is applied as a hot fomentation. A similar fomentation, or just combining Phytolacca with Achillea and apple cider vinegar can be used for tonsillitis.
- Topical Applications: Phytolacca is good added to poultices for scabies, tinnea infection, and acne. *P. decandra* contains many ribosome-inhibiting proteins (RIPs). RIPs are anti-viral as they can enter virally-infected cells and inhibit viral replication. Phytolacca increases catabolic waste removal, and for this reason, Phytolacca is often added to alterative formulas. Phytolacca, Lobelia, and Verbena are a good combination for acne as a result of poor skin elimination. Phytolacca can be used in formulas for eczema and psoriasis for the same reason. Phytolacca can be used for chronic rheumatic diseases where there is skeletal congestion. Phytolacca combined with Commiphora and Baptisia makes a good mouthwash for swollen tongue, canker sores and sore gums.

Current Research Review:

- **ENT:**
  - **Acute tonsillitis:**[1690]
    - Design: Clinical trial
    - Patients: Forty-eight patients with symptoms of acute tonsillitis, 6-73 yo.
    - Therapy: Liquid or tablet formulation of herbal compound of Phytolacca, Guajacum, and Capsicum.
    - Results: `More than half of the patients reported marked alleviation of the principal symptom, moderate or severe difficulty in swallowing, within the first 5 days of treatment. Comparable improvements occurred in other outcome measures, including earache, headache, and fatigue.`

Pharmacy: Cook noted that the relaxing quality of Phytolacca berries is so great, that it is usually best to combine them with a moderate quantity of such stimulants as Menispermum or Stillingia

Decoction of fresh root: 1 tsp./cup water; 1 cup TID
Powdered root: 0.3 g TID
Tincture 1:10 45% EtOH; sig 0.2-0.6 ml TID [10ml/week = MAX]
Poultice of fresh root or herba [Caution: application of fresh root or herba can cause erythema and blistering]

Contraindications: Phytolacca is contraindicated during pregnancy and nursing.

Toxicity: Phytolacca, particularly the alkaloid phytolaccin, can be toxic. It affects the medulla in the brain causing paralysis, bradycardia, decreased respiration, and decreased skeletal muscle coordination. The alkaloids can build up in the body and be at potentially toxic levels for 1-2 weeks. Therefore, if any toxic effects are noticed, stop the use of this herb immediately. This alkaloid is eliminated through the kidneys, therefore someone with kidney disease should not use Phytolacca.

This plant has mitogenic action and may cause blood cell abnormalities. The roots and seed are the most toxic but it has been recorded that the young shoots and leaves have toxic effects. Toxic effects include: vomiting, diarrhea, nausea, stomach cramps, dizziness, hypotension, decreased respiration, and headaches.

King noted that when applied to the skin, either in the form of juice, strong decoction, or poultice of the root, it produces an erythematous, sometimes pustular, eruption. The powdered root when inhaled is very irritating to the respiratory passages, and often produces a severe coryza, with headache and prostration, pain in chest, back, and abdomen, conjunctival injection and ocular irritation, and occasionally causes violent emeto-catharsis.

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Picorrhiza kurroa

Scrophulariaceae

Common name:

Habitat:

Botanical description small, perennial herb that grows in the alpine Himalayas at 3000-5000 m

Part used: Root

Historical Use: Picorrhiza is a traditional Ayurvedic herb that is used as a laxative, choleretic, galactagogue, bitter tonic, febrifuge, and for the treatment of asthma and poisonous bites and stings. Much research has been done on the root, confirming its historical uses.

Constituents:

- Iridoid glycosides (picrosides and kutkoside)
- cucurbitacin glycosides

Pharmacology: Of the constituents in Picorrhiza, the glycosides picroside I, kutkoside, androsin and apocynin have received most of the research attention. They have been shown in animal studies to be anti-allergic and to decrease arthritis. [1691]

- Antioxidant: A tincture of Picorrhiza protected rats against oxidation in the liver,[1692] suggesting Picorrhiza has antioxidant properties. Picorrhiza can protect animals from damage by several potent liver toxins, offering protection as good as or better than silymarin.[1693]
- Anti-inflammatory: Picorrhiza has general anti-inflammatory activity. This effect is mediated through increased sensitivity of B-adrenergic receptors and functional impairment of pro-inflammatory cells such as neutrophils, macrophages and mast cells. This latter effect is accomplished by influencing the membrane-linked activation events in inflammatory cells.
- Immunomodulation: Picorrhiza , more specifically one of its constituents, apocynin, reduces neutrophil oxidative burst.[1694] Other neutrophil functions such as chemotaxis, phagocytosis, and intracellular bacteriocidal activity are unaffected. Also unaffected are humoral and cellular immunity. This type of immune modulation is indicated in conditions such as rheumatoid arthritis, and indeed, a study utilizing 0.024 mg/kg of apocynin demonstrates significant reduction in joint swelling and to rebound flare-up of joint swelling after treatment discontinuance.[1695]
  The immunostimulatory properties of Picorrhiza include enhanced T-cell, B-cell, and phagocytic function.[1696] After oral administration, there is about a 10-fold increase in antibody production and about a 75% increase in activated lymphocytes. Delayed hypersensitivity is increased by 200% after an oral dose.[1697] Macrophage migration and phagocytic activity increase after oral ingestion.
- Platelet inhibition: Apocynin has been shown to inhibit thromboxane synthetase and platelet-activating factor, thus inhibiting arachidonic acid-induced platelet aggregation. [1698]

Medicinal actions: Hepatoprotection, choleretic, anti-asthmatic, anti-inflammatory, immunostimulatory

Medicinal use: In summation, Picorrhiza is useful in the treatment of acute and chronic infections, weakened immunity, toxic liver damage, liver infections, autoimmune disease, asthma (esp. vitiligo and rheumatoid arthritis), and fevers of unknown origin or 2º infection. Picorrhiza combines well with Silybum and Echinacea.

- Dermatological Conditions: Preliminary research with use of Picorrhiza for treatment vitiligo in combination with methoxsalen and sun exposure found that it was helpful compared to using methoxsalen and sun exposure alone.[1699]
- Gastrointestinal Conditions: Picorrhiza is considered a good bitter herb good for improving digestion.
- Hepatobiliary Conditions: It is hepatoprotective comparable to, and, in some cases, superior to, Silybum marianum in many animal studies.[1700, 1701, 1702,1703] Picorrhiza exerts its hepatoprotective activity by restoring enzyme activity after toxic damage, scavenging free radicals (thus reducing lipid peroxidation), and stimulating nucleic acid and protein synthesis.[1704, 1705] These actions are due to the iridoid glycosides and other as yet unidentified compounds. Picorrhiza also is effective against the complement-mediated liver damage 2º viral hepatitis (esp. Hep. B) leading to faster recovery.[1706, 1707] Picorrhiza exerts choleretic activity marked by an increase in bile flow, and bile salt and bile acid output.[1708] This, in turn, causes a systemic lipid-lowering effect.
- Immune Conditions: Picorrhiza, given orally, has a mast cell stabilizing effect throughout the body, and especially in the lungs. When compared with aerosol doses of disodium cromoglycate, oral Picorrhiza resulted in greater mast cell stabilization and reduction in allergic reaction.[1709] Picorrhiza has been shown to alter the mast cell membranes leading to their stabilization.
  In spite of its immune-stimulating activity, Picorrhiza has been shown to be effective against a variety of autoimmune conditions such as vitiligo, psoriasis, rheumatoid arthritis, ankylosing spondylitis.
- PulmonaryConditions: Picorrhiza has been studied in the treatment of asthma [1710, 1711] However, these are

preliminary reports only and a follow-up double-blind study did not confirm these earlier studies.[1712] Picorrhiza also enhances the bronchodilating effects of sympathicomimetic amines.

Current Research Review:

- **Dermatology:**
  - **Vitiligo:** [1713] Abstract is unavailable from Medline, 11/19/02.
- **Infectious diseases:**
  - **Viral hepatitis:** [1714]
    - Design: Experimental and randomized double-blind placebo-controlled clinical trial
    - Patients: Clinical trial part: Thirty three patients with acute viral hepatitis, HBsAg negative
    - Therapy: Picorrhiza kurroa root powder, 375 mg TID x 2 weeks
    - Results: Difference in values of bilirubin, SGOT and SGPT was significant between placebo and Pk groups. The time in days required for total serum bilirubin to drop to average value of 2.5 mg% was 75.9 days in placebo as against 27.44 days in Pk group. The present study has shown a biological plausability of efficacy of Pk as supported by clinical trial in viral hepatitis, hepatoprotection in animal model and an approach for standardizing extracts based on picroside content.
- **Pulmonology:**
  - **Asthma**:
    - Study 1:[1715] Abstract is unavailable from Medline, 11/19/02
    - Study 2:[1716] Abstract is unavailable from Medline, 11/19/02.

Pharmacy: The iridoid glycosides in Picorrhiza are best extracted in ethanol, but the root is so bitter, compliance may be low.
Tincture 1:2 ; sig 1-4 ml/day
Capsule of powdered root 400-1500 mg/day, up to 3.5g for the treatment of fevers[1717]

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Pimpinella anisum

Umbelliferae

Common name: Aniseed

Habitat: Origin of the plant is unknown, but it probably came from the Near East. Today, it is cultivated mainly in Southern Europe, Turkey, central Asia, India, China, Japan, Central and South America.[1718]

Botanical description:[1719]

- Flower and Fruit: The inflorescences are medium-sized umbels with about 7-15 scattered pubescent rays. There is usually no involucre, but sometimes there is a single bract. There are barely any sepals. The petals are white, about 15 mm long, and have a ciliate margin. They have small bristles on the outside and have a long indented tip. The fruit is downy, ovate to oblong and flattened at the sides.
- Leaves, Stem, and Root: The plant is an annual herb ~0.5 m high, which is downy all over. The root is thin and fusiform, and the stem is erect, round, frooved and branched above. The lower leaves are petiolate, orbicular-reniform, entire and coarsely dentate to lobed. The middle leaves are orbicular and 3-lobed or 3-segmented with ovate or obovate segments. The upper leaves are short-petioled to sessile with narrow sheaths, they are pinnatisect with narrow tips.

Parts used: Dried fruit

Constituents: volatile oil (1-4%), coumarins, flavonoid glycosides, phenylpropanoids, lipids, fatty acids, sterols, proteins, carbohydrates.

Pharmacology:

- Aniseed is mildly estrogenic, probably due to dianethole and photoanethole.[1720]

Medicinal actions: Expectorant, anti-spasmodic, carminative, anti-microbial, aromatic, galactogogue

Traditional Medicinal Uses:

Current Medicinal Uses:

- Gastroenterology: The oil of aniseed one of the sweetest volatile oils. It is a true relaxant and has carminative and calming effects in children and adults. It is a very reliable carminative and can be administered with cathartics and other bitter tasting herbs to mask the taste. One or two drops can be safely given internally to children to allay nausea and stomach pain.
- Respiratory System Conditions: Aniseed is also an expectorant and anti-spasmodic. It is most indicated when there is persistent, irritable coughing. Pimpinella stimulates cilial function (in-vitro),[1721] aiding its expectorating action.
- Gynecology: Aniseed is mildly estrogenic.
- Dermatology: Externally, aniseed can be used to control lice and scabies (especially if combined with lavender oil).

Pharmacy:

- Infusion: 1 heaping tsp coarsely powdered herb/cup water.[1722]
- Liquid extract: 1:3 dry plant liquid extract, sig 10-40 gtts QD-QID in little water.[1723]

Contraindications:

Toxicity/Side Effects:

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[1721] W. Mueller-Limmroth and H. H. Froenlich, *Fortschr. Med.*, 1980, Vol. 98, N. 3, p.95

[1722] Sharol Tilgner, *Herbal Medicine From the Heart of the Earth*, Wise Acres Press, Inc., Creswell, OR, 1999, p. 34

[1723] Ibid

Piper methysticum

Piperaceae

Common name: Kava-kava

Habitat: Polynesia, Sandwich Islands, South Sea Islands. Grows best up to 1000 feet above sea level in cool, moist highlands or wet forests.

Botanical description: A perennial shrub coarsely branching, slightly succulent. The shrub grows to several feet with cordate leaves, acuminate and short axillary spikes of flowers. The stem is dichotomous and spotted. The rhizome is whitish or grey-brown roughly wedge-shaped fragments.

Parts used: Rhizome

Historical uses: The natives of the South Pacific Islands where kava-kava grows have long used kava-kava ceremoniously as a social lubricant. A fermented liquor is prepared from the rhizome. Alternatively, the root is chewed to mix with saliva (the saliva breaks down the starch in the root and facilitates the suspension of the resin) and drunk with water or coconut juice. The first effect is a numbing and astringent effect in the mouth. This is followed by a relaxed, sociable state where fatigue and anxiety are lessened. Kava-kava has reported aphrodisiac qualities, and used ceremoniously in a group will awaken warm feelings towards the participants. Eventually a deep restful sleep ensues from which the user awakens the next morning refreshed and without a hangover. Excessive continual use can cause inflammation of the body and eyes resulting in leprous ulcers with a scaling dermatitis. Also, although non-addictive, excessive consumption can lead to dizzines and stupefaction.

Constituents: root: resinous kava lactones, also called kava alpha-pyrones (5.5%-8.3%), mainly consisting of kavain, dihydrokavain, and methysticin.

Medicinal actions: sedative/hypnotic, muscle relaxant, anticonvulsant, anesthetic, analgesic, antifungal, spasmolytic, anti-depressant

Medicinal use:

- Nervous Conditions: The primary effect of kava-kava ingestion is stimulation followed by sedation of the CNS. Small doses produce euphoric well-being, while large doses or frequently repeated small doses produce extreme relaxation, lethargy and eventually induce sleep. The effects of kava-kava may not be noticed until after it has been used several times. These sedative and hypnotic effects are best secured when the total extract of the rhizome was used rather than any of the isolated kava lactones.[1724]

  Several studies have demonstrated that the kava lactones produce sedation and EEG changes similiar to sedative drugs. It appears that the limbic structures of the brain, especially the amygdalar complex and reticular formation, are the main areas affected by kavain and more extensively by kava extract. Acting on these centers induces sleep without sedation (sleep hangover). Kava does not act similiarly to benzodiazepines or tricyclic antidepressants since, unlike the latter two pharmaceuticals, kava extract does not interact with GABA or benzodiazepine binding sites in the brain.[1725,1726]

  In patients with anxiety, administration of kava extract can improve vigilance, memory and reaction time in addition to exerting an anxiolytic effect similiar to oxazepam.[1727] The combined anxiolytic and mild anti-depressive effects of kava-kava give it indication in all types of non-psychotic forms of anxiety and/or mild depression. Kava does not dampen alertness or interact with mild alcohol consumption, and unlike benzodiazepine drugs, kava carries no risk of tolerance or addiction.
- Gastrointestinal Conditions: Kava exerts tonic activity on the gastrointestinal tract. It is most indicated in persons who demonstrate sluggish digestion and are lethargic in their overall disposition. Kava extract will promote glandular secretions of the digestive tract and enhance assimilation of food.
- Musculoskeletal Conditions: Kava extract exerts muscle relaxing and spasmolytic effects on both skeletal and smooth muscles. The relaxing effects on skeletal muscle are noted with small doses. Higher doses cause ataxia and paralysis without loss of consciousness. If the respiratory center is unaffected, this is followed by complete recovery. The skeletal muscle relaxing effects of kava-kava can be utilized topically and/or internally. Kava extract combines well with Lobelia and Stachys officinalis for the treatment of skeletal muscle tension. The kava lactones act synergistically to reduce convulsions, for example those caused by strychnine or those of epilepsy (Kava is not strong enough to act as the sole therapeutic agent in epilepsy).[1728]
- Pain Management: Kava extract exerts local anesthetic and analgesic activities similiar to cocaine and procaine. Local injections of kava lactone extracts may be of value in pain control. The strength of the analgesic activities of kava extract fall between that of aspirin and morphine. Kava lactones administered with aspirin indicate an additive synergism between the two. Caffeine shortens the duration but not the intensity of the analgesic activities of kava extract. Kava exerts its analgesic effects via non-opiate pathways as is indicated by the fact the naloxone (a morphine antagonist) has no effect on the analgesic activity.[1729]
- Genitourinary Condtions: Kava kava has historical use in the treatment of UTIs. It is an effective addition to UTI formulas

because of its analgesic effect. It was thought to be antibacterial as well. However, in vitro studies have failed to demonstrate significant antibacterial activity. Nonetheless, some of the lactones are markedly fungicidal, although not against Candida spp. Additionally, it is possible that the lactones after being chemically altered in the blood do possess antibacterial activity in the urine.[1730,1731,1732] Additionally, Piper methysticum tonifies and soothes the mucosal membranes of the urinary system. Finally, Kava possesses a diuretic action.

Interstitial cystitis
pain

Pharmacy: None of the alpha-pyrones are soluable in water. The are soluable in alcohol, saliva, oil, and other fat solvents. The kava lactones are more bioavailable than the isolated kavains.[1733] This is probably due to the content of saponins in the herb making the water-insoluable compounds water-soluable. High doses of ethanol potentiate the sedative and hypnotic activity of kava but also increase the toxicity of kava.

Capsules, standardized: sig 100-200 mg kava lactones/day in divided doses
Dried rhizome: sig 1.5-3 g/day in divided doses (mixed with saliva first)
Tincture 1:2 45% EtOH: sig 3-6 ml/day in divided doses (20-40 ml/week)
Note: For sleep inducing effects, the same daily dose should be taken 30-60 minutes before bed.

Contraindications: Operating machinery

Toxicology: LD50 of kava lactones given orally in mice was between 920 and 1050 mg/kg of isolated lactones. The LD50 of kava lactones given by injection to various test animals ranged from 300-400 mg/kg. Doses of 50mg/kg three times a week for 3 months produced no toxicity in rats.[1734,1735]

Human studies using kava at therapeutic dosages have failed to demonstrate any toxic effects. Prolonged use of a dose equivalent to 400 mg or more of kava lactones per day is likely to cause the characteristic skin lesions of kava-kava toxicity (pigmented, dry, covered with scales) which heals upon discontinuance of the kava extract.

At doses greater than 9g per day, liver enzymes can elevate.

[1724] Klohs, et al, J Med Pharm Chem, 1, 95: 1959
[1725] Holm et al, Arzneim-Forsch, 41, 673:1991
[1726] Davies et al, Pharmacol Toxicol, 71, 120: 1992]
[1727] Lindenberg and Pitule-Schodel, Fortschr Med, 108, 49: 1990
[1728] Meyer, and Kretzchmar, Klin Wschr, 44, 902: 1966
[1729] Jamieson and Duffield, Clin Exp Path Physiol, 17, 495: 1990
[1730] Hansel, Pacific Science, 22, 293: 1966
[1731] Hansel et al, Planta Med, 14, 1: 1966
[1732] Duffield et al, J Chromatogr, 475, 273:1989
[1733] Biber, Internal Pulbications of Dr. Willmar Schwabe, Karlsruhe, 1989
[1734] Meyer, Arch Int Pharmacodyn, 138, 505: 1962
[1735] Meyer, Pharmacology of Kava Drugs, Habilitationsschrift, Freiburg, 1966.

Piper nigrum

Piperaceae

Common name: Black pepper, white pepper

Habitat: Grows wild in southern India, and is cultivated in tropical Asia and the Caribbean.[1736]

Botanical description:[1737]

- Flower and Fruit: The inflorescences are pendulous, axillary spikes 5-15 cm long, containing over 100 inconspicuous white florets. The florets have 1 large ovary with 3 stigmas, 2 stamens and a reduced perianth. Red berry-like drupes form 30-50 flowers, which are fertilized.
- Leaves, Stem, and Root: The plant is actually a liane, which in cultivation is trained on posts and wire. It can grow to over 6 m. The stem is strong and woody and the leaves are 5-10 cm wide, 8-18 cm long, and are on 5 cm long petioles.

Parts used: Fruit

Constituents:

- Volatile oil (2%-4%) [Black pepper]: B-bisabolene, camphene, B-caryophyllene, etc.
- Alkaloids: piperine (11%), piperanin, piperettine,piperolein A and B, piperidine;
- Fixed oil; Protein

Medicinal actions: Carminative, stimulant

Traditional Medicinal Uses:

- Traditionally, pepper has been considered to be an aphrodisiac and a valuable treatment for impotence.

Current Medicinal Uses:

- Pepper is used throughout the world as a condiment. Many chefs consider it to be the most important spice.
- Gastroenterology: The medicinal use of pepper is primarily as a digestive stimulant and carminative. The volatile oil and alkaloids create a spasmolytic effect in the gastrointestinal system. This allows for normal peristalsis and hence optimal digestive functioning. Pepper is exothermic and as such is warming to the digestive system. It is often used stimulate sluggish deficient digestion and to stimulate appetite. Pepper clears mucous from the digestive tract (as well as the respiratory system) and is thus helpful in chronic inflammatory conditions. Pepper may also be added to detoxification teas for its carminative, stimulating and warming effects. Pepper is more warming if it is heated. Pepper added to already cooked food has less stimulating and warming qualities.

Pharmacy:

- 0.3-0.6 g as a single dose, or 1.5 g qd.[1738]

Contraindications: Do not use pepper internally in individuals with active ulceration.

Toxicity/Side Effects:

[1736] *PDR for Herbal Medicines,* Medical Economics Company, Montvale, New Jersey, 1998, p. 1045

[1737] Ibid.

[1738] Ibid.

Piscidia erythrina

Leguminosae

Common name: Jamaican Dogwood

Habitat:

Botanical Description: A tree. The pods bear four projecting longitudinal wings. The bark's outer surface is yellow or white, and if damp a bluish color. Inside it is fibrous and dark brown.

Part Used: Bark

Constituents [1739]

- Isoflavonoids: including among others jamaicine, ichthynone, the rotenoids (rotenone, milleton, isomilletone), sumatrol, lisetin, piscerythrone, piscidine,
- resin alkaloid.
- Glycosides: piscidin, jamiacin, icthyone
- Tannins

Medicinal actions: Sedative, anodyne, sialogogue, diuretic, diaphoretic

Historical Use: Fisherman in the W. Indies use Piscidia tree branches as fish spears, causing paralysis and death of the fish.

Traditional Medicinal Use:

Current Medicinal Use:

Generally, Piscidia is indicated for pain, general distress, intestinal colic, gall-stone colic, renal colic, sleeplessness, migraine headaches and neuralgia delirium, hysteria, and spasm and associated pain of uterus and skeletal mm. In some individuals with a toothache (abscess, periodontal inflammation), Piscidia will produce much relief and will aid in sleep. However, in other individuals, it will cause nausea and not produce pain relief.

- Cardiovascular Conditions: Piscidia can be used in hypertension with a weakened heart as it slows the pulse, increases arterial tension followed by reduced arterial tension.
- Gynecological Conditions: Piscidia is used for spasm and associated pain of uterus, dysmenorrhea, ovarian neuralgia, labor pains dysmenorrhea with assoc. nervous and/or musculoskeletal tension.
- Inflammatory Conditions: Piscidia is indicated for inflammatory fever and rheumatism.
- Pulmonary Conditions: Piscidia can be used in the treatment of spasmodic cough and bronchitis.
- Sleep Conditions: Piscidia is indicated in insomnia 2º nervous tension. As a treatment for insomnia, Piscidia will produce a restful and quiet sleep especially if the insomnia is due to anxiety and worry.

Pharmacy: Despite its toxic tendencies, Piscidia must be given in sufficient repeated doses in order to be effective.
Tincture- 1:10; 1-2 ml TID
Tea- 1-2 gm TID

Contraindications: Piscidia is contraindicated in the treatment of children and elderly.[1740]

Toxicity:

Piscidia is narcotic and should not be used in excess of the prescribed dosage range. If given in high enough doses, Piscidia will cause bradycardia and if given in toxic amounts will cause convulsions, general paralysis, and death.

Piscidia may potentiate the effect of sedatives and tranquilizers.[1741]

[1739] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[1740] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 87

[1741] Brinker

Plantago afra/ P. psyllium/ P. ovata/ P. ispaghula

Plantaginaceae

Common name: psyllium

Habitat:

Botanical description:

Part used: seed

Historical use:

Energetics:

Constituents: [1742]

- **Plantago Afra** (the dried ripe seed): Mucilages (10-12%, chiefly arabinoxylans) Iridoide monoterpenes: aucubin
- **Plantago Isphagula** (the ripe seed): Mucilages (20-30%, parent substances arabinoxylans), Fatty oil, Iridoide monoterpenes: aucubin

Pharmacology

Seeds

- **Atherosclerosis, hypercholesterolemia and hyperlipidemia**: Probably due to its soluble-fiber content, psyllium lowers LDL.
- **Diabetes**: Psyllium slows the gastric emptying and the subsequent postparndial rise in blood sugar. [1743]
- **Constipation**: The laxative properties of Psyllium are due to the swelling of the husk when it comes in contact with water. This forms a gelatinous mass that keeps feces hydrated and soft. The resulting bulk stimulates a reflex contraction of the walls of the bowel, followed by emptying.[1744]
- **Diarrhea**: Psyllium works for diarrhea by normalizing the passage time of the bowel content by water bonding. [1745]
- **As a respiratory demulcent:** The mucilage from the leaves has a soothing and anti-inflammatory effect on the lower respiratory tract. The exact mechanism is not clear.

Medicinal actions: demulcent, bulk laxative

Traditional Medicinal Uses:

Current Medicinal Uses:

- **Cardiovascular**
  - **Atherosclerosis, hypercholesterolemia and hyperlipidemia:** Numerous double-blind studies confirm Psyllium can lower total cholesterol and low-density lipoprotein (LDL) however, levels of (HDL)cholesterol are not affected.[1746]
- **Endocrinology**
  - **Diabetes (at least three studies):** A double-blind placebo-controlled with 125 patients were given 5 g Psyllium t.i.d. before meals over a 6-week period. Fasting plasma glucose, total plasma cholesterol, LDL cholesterol, HDL cholesterol and triglyceride levels were measured every 2 weeks. There was an excellent tolerance to Psyllium, without significant adverse effects. Fasting plasma glucose, total cholesterol, LDL cholesterol, and triglycerides levels, showed a significant reduction ($p < 0.05$), whereas HDL cholesterol increased significantly ($p < 0.01$) following Psyllium treatment. These results showed that 5 g t.i.d. of Psyllium is useful, as an adjunct to dietary therapy, in patients with type II diabetes, to reduce plasma lipid and glucose levels, resolving the compliance conflict associated with the ingest of a great amount of fiber in customary diet.[1747]
- **Gastrointestinal**
  - **Constipation:** One hundred, forty-nine patients with chronic constipation at two gastroenterology departments in Munich, Germany, were treated with Plantago ovata seeds, 15-30 g/day, for a period of at least 6 wk. Eighty percent of patients with slow transit and 63% of patients with a disorder of defecation did not respond to dietary fiber treatment, whereas 85% of patients without a pathological finding improved or became symptom free. This study made an important conclusion for the naturopathic physician. Slow GI transit and/or a disorder of defecation may explain a poor outcome of dietary fiber therapy in patients with chronic constipation. A dietary fiber trial should be conducted before technical investigations, which are indicated only if the dietary fiber trial fails. [1748]

Pharmacy:

Contraindications:

Toxicity:

[1742] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001.

[1743] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001.

[1744] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001.

[1745] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999, p. 511

[1746] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001.

[1747] Rodriguez-Moran M, Guerrero-Romero F, Lazcano-Burciaga G. Lipid- and glucose-lowering efficacy of plantago psyllium in type II diabetes. *J Diabetes Complications* 1998;12:273–8

[1748] Voderholzer WA, Schatke W, Mühldorfer BE, et al. Clinical response to dietary fiber treatment of chronic constipation. *Am J Gastroenterol* 1997;92:95–8.

Plantago lanceolata/P. major — Plantaginaceae

Common name: lance shaped plantain (P. lanceolata), broad leaf plantain (P. major)

Habitat: Plantain species grow throughout the world.

Botanical description: Leaves are strongly veined, in a basal rosette, narrow and long tapering to a tip. The flowers are tiny, yellowish-green with purple then yellowish anthers in a long dense spike. The plant grows to a height of up to 4 inches.

Parts used: Leaves

Constituents: [1749]

- **Leaves**: Plantago Lanceolata and major
  - Iridoid monoterpenes (2-3%): chief components are aucubin (rhinantin) and catalpol
  - Mucilages: (2-6%, glucomannans, arabinogalactone, rhamnogalacturonane)
  - Flavonoids: including among other chief components apigenine-6,8-diglucoside, luteolin-7-glucuronide
  - Caffeic acid esters: chlorogenic acid, neochlorogenic acid, acteoside (verbascoside)
  - Hydroxycoumarins: aesculetin
  - Saponins (traces), Tannins, Silicic acid , Oleanolic acid

Pharmacology:

- The liquid extract and the pressed juice of fresh plantain herb possess proven bacteriostatic and bactericidal effects due to the tannin content.[1750] The protective effect of mucilage isolated from Plantago major leaves against aspirin induced gastric ulcer has been demonstrated in rats.[1751] The polysaccharides from P. major protects against pneumococcal infection in mice when administered systemically prechallenge. The protective effect is from stimulation of the innate and not the adaptive immune system.[1752]
- The mucilage from the leaves has a soothing and anti-inflammatory effect on the lower respiratory tract. The exact mechanism is not clear.[1753]

Medicinal actions: antiinflammatory, diuretic, antihemorrhagic, expectorant, astringent, antibacterial

Traditional Medicinal Use:

Specific Indications and Uses: Locally, toothache and earache.[1754]

According to Cook, the roots and leaves are diffusively relaxant and stimulant, leaving behind a gentle tonic impression. The principle tissues of influence include the mucous membranes, glandular organs and kidneys. [1755]

- ENT Conditions: Plantago was used as a remedy for *toothache* from dental caries: the cavity was cleansed and specific Plantago major applied on cotton to the sensitive pulp and renewed every half-hour. The same preparation, locally applied, was often used to treat earache.
- Gastrointestinal Conditions: Plantago was utilized in the treatment of colic, cholera infantum, aphthae, diarrhoea, dysentery, and hemorrhoids, somewhat for its toning influence on mucous membranes in subacute cases.
- Genitourinary Conditions: Plantago was indicated when dysuria and hematuria were present. Plantain was of much use in subacute and chronic difficulties of the kidneys and bladder giving rise to an aching back, cystic catarrh and scanty, scalding urine. Cook considered it toning rather than forcing to the kidneys.
  Bedwetting in children, due to relaxed vesical sphincter, with profuse colorless discharge of urine, was said to be relieved by Plantago.
- Gynecological Conditions: Plantago was indicated in the treatment of menorrhagia and leucorrhoea, as the toning influence on mucous membranes was thought of some service in subacute cases.
- Infectious Conditions: The principal use of Plantain was in scrofula and light cases of secondary syphilis.
- Metabolic Conditions: According to King, Plantago was used for wasting (incipient phthisis).
- Neurological Conditions: Its internal use was said to control toothache through its effects upon the trifacial, tic-douloureux (trigeminal neuralgia) being benefited in the same manner.
- Pulmonary Conditions: Plantago was utilized in cases of pulmonary hemorrhage.
- Topical Applications: A remedy in high repute as an antidote to the bites of venomous serpents, spiders, and insects, Plantago was also externally useful in wounds, ulcers, ophthalmia, eczema, erysipelas, and some other cutaneous affections.

Current Medicinal use:

P. lanceolata shares its medicinal effects with its close relative, Plantago major. However, Plantago lanceolata seems to exert more of its effects internally, while P. major is a good plant for external use.

Plantago major L. leaves have been used as a wound healing remedy for centuries in almost all parts of the world and in the treatment of a number of diseases apart from wound healing. These include diseases related to the skin, respiratory organs, digestive organs, reproduction, the circulation, against cancer, for pain relief and against infections. P. major contains biologically active compounds such as polysaccharides, lipids, caffeic acid derivatives, flavonoids, iridoid glycosides and terpenoids. Alkaloids and some organic acids have also been detected. A range of biological activities has been found from plant extracts including wound healing activity, anti-inflammatory, analgesic, antioxidant, weak antibiotic, immunomodulating and antiulcerogenic activity.[1756]

- ENT Conditions: It is also indicated in Otitis media.
- Genitourinary Conditions: Plantago spp. are also useful in hematuria and dysuria, especially if long-standing, and when accompanied by copious discharge.
- Pulmonary Conditions: P. lanceolata is a gentle soothing expectorant most indicated in irritated coughs and mild bronchitis. It may be more beneficial long-term. It exerts astringent and alterative properties internally, especially in chronic inflammatory conditions of the mucosa, glandular tissues, or septicemia. The Commission E indicates its use in Catarrhs of the respiratory tract, inflammatory alterations of the oral and pharyngeal mucosa. Plantago is therefore most indicated in irritated lung conditions in which blood is expectorated or which are accompanied by glandular swelling, diarrhea, and/or skin inflammation. In acute and chronic bronchitis Plantago is indicated when the sputum is particularly copious or if the productive cough lingers beyond the acute stage. Plantain reduces mucus in the upper respiratory tract as well.[1757]
- Topical Applications: he external use of Plantago is primarily restricted to P. major. Externally, Plantago major is antiinflammatory, antimicrobial, antipruritic, and vulnerary. The macerated leaves or fresh juice of the plant are excellent, quick healing agents for cuts, wounds, bruises and earache (infection).

Pharmacy: Plantain root and leaves are not strong, suggesting a concentrated decoction, tincture or extract for internal use.
1:5 tincture—2-3 ml TID (Alschuler)
2 tsp. dried herb/cup infusion TID (Alschuler)
fresh juice—5-15 ml TID (Alschuler)

Contraindications: No information regarding contraindications is currently available.

Toxicity: No information regarding toxicity is currently available.

[1749] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001.

[1750] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[1751] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p, 26.

[1752] Hetalnd, Protective effect of Plantago major L. Pectin polysaccharide against systemic Streptococcus pneumoniae infection in mice.Scand J Immunol. 2000 Oct;52(4):348-55.

[1753] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 209

[1754] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[1755] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy… Eclectic Medical Publications, Sandy, OR 1985 p. 615-6

[1756] Samuelsen AB**.** The traditional uses, chemical constituents and biological activities of Plantago major L. A review.J Ethnopharmacol. 2000 Jul;71(1-2):1-21. Review.

[1757] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000.

Podophyllum peltatum — Berberidaceae

Common name: May apple, Devil's apple, Wild Lemon, American Mandrake

Habitat: The plant is native to the middle and Western states of N. America.

Botanical description: An erect perennial that grows to 0.5 meters in height. A single stalk, often forked, produces two umbrella-like leaves at the top of the plant. A white flower, 1.5 inches in diameter, appears in the fork of the stem. The flower is followed by a plum-like yellow fruit. The reddish-brown rhizome is composed of many thick tubers held together by fleshy fibers, which spread underground sending out many smaller fibers. The outer surface is smooth or wrinkled.

Parts used: Rhizome and resin extracted from it.

Identified Constituents: [1758]

- *Lignans:* chief components podophyllotoxin (20%), additionally including among others alpha-peltatin (5%), beta-peltatin (10%), 4′-dimethyl podophyllotoxin, dioxypodo- phyllotoxin
- podophyllin resin
- Flavonoids: kaempferol, quercetin and their glycosides

Pharmacology: Podophyllotoxin and derivatives exhibit pronounced biological activity mainly as strong antiviral agents and as antineoplastic drugs. Podophyllotoxins are classical spindle poisons causing inhibition of mitosis by blocking mitrotubular assembly.[1759] The podophyllotoxin derivatives etoposide, etopophos (etoposide phosphate), and teniposide are successfully utilized in the treatment of a variety of malignant conditions.[1760]

Medicinal actions: Cathartic, Purgative, Antineoplastic, Antiviral, Cholagogue, Alterative, Hepatic tonic, Cytotoxic.

Traditional Medicinal Use:

Podophyllum peltatum was forwarded into the Eclectic medical practice largely by Dr. John King, one of the foremost pharmacists and physicians in the mid-1800's. Dr. King isolated the resin from the rhizome of Podophyllum that he called podophyllin. He identified this constituent as the active constituent responsible for the cathartic effects of Podophyllum. He advocated the use of podophyllin instead of the tradition mercury as a safer cathartic. After several decades podophyllin did become the cathartic of choice and is still used for this purpose today by conventional doctors.

Cook described the thoroughly dried root of Phytolacca as a very concentrated stimulant, acting slowly and persistently, influencing the salivary glands, mucous membranes, gall-ducts, liver, bowels and even the kidneys. It was used as a cathartic in the Physiomedical profession as well.

- Gastrointestinal Conditions: In moderate doses, Podophyllum is strong cholagogue and a slow, but drastic purgative. Atonic constipation, especially with portal insufficiency responds well to Podophyllum. Podophyllum also stimulates the release of water and other sero-sanguinous discharge from tissues and is thus helpful in relieving inflammation. In large doses, Podophyllum can cause vomiting and even gastritis and enteritis, which can potentially be fatal. The Eclectics would administer Podophyllum in small, repeated doses often with other purgatives (i.e. Aloe and Rheum) and strong antispasmodic anodynes (i.e. Hyoscyamus and Atropa belladonna). Podophyllum was never given warm or hot. Large doses were never used as they tended to cause violent emesis and catharsis.
- Gynecological Conditions: The Eclectic physicians also used Podophyllum to treat ovarian cancer. Podophyllum has cytotoxic properties and appeared to the Eclectics to be effective in treating ovarian cancer. Alopecia was a common side effect of this treatment.
- Hepatobiliary Conditions: Podophyllum was considered by Eclectic physicians to be one of the most stimulating and powerful alteratives available. Podophyllum acts strongly on the liver and intestines. It is a potent cholagogue and stimulates peristalsis significantly. The Eclectics used this herb to relieve hepatic congestion, dyspepsia and gall bladder dysfunction.
- Topical Applications: Podophyllum powder an also be applied to condyloma acuminata and was reported by King to be an excellent treatment.

Current Medicinal Use:

- Topical Applications: The internal use of Podophyllum is no longer advised because of its toxicity. In addition to being a drastic purgative, Podophyllum exerts cytotoxic effects. Topical application of Podophyllum is still practiced. Podophyllin is an ingredient in Compound Benzoin Tincture, which is used for venereal warts and verrucae.

  Current forms of treatment for papillomavirus genital warts include cryotherapy, Podophyllum resin, podophilox, trichloroacetic acid, laser ablation, loop electrosurgical excision procedure (LEEP), fluorouracil and alpha interferon. Success in treating

condyloma may be increased if the area is first soaked with 5 percent acetic acid to more clearly show the extent of the local infection. Recurrence is a problem no matter what form of therapy is used.[1761]

Current Research Review:

- **Oncology:**
  - **HIV-related hairy leukoplakia:** [1762]
    - Design: Randomized single-blind controlled clinical trial
    - Patients: Ten HIV-infected patients with bilateral hairy leukoplakia of the tongue.
    - Therapy: Topical podophyllum resin 25% solution. (One side of the tongue treated, one side – control)
    - Results: Significant resolution of hairy leukoplakia was noted on the treatment side compared with the control side at the 2-, 7-, and 30-day levels; the 2-day results were the most significant. Furthermore, the patients reported minimal side effects, which included burning sensation, bad or altered taste, and pain, that were of mild intensity and short duration. The side effects were reported to occur immediately after the topical application.
  - **Cervical carcinoma:**[1763]
    - Design: Randomized controlled clinical trial.
    - Patients: Two hundred fifty six patients with squamous cell carcinoma of uterine cervix; 173 patients with stage II and 83 patients with stage III.
    - Therapy: Radiation with 6000 mgeh Ra and 4500 R 60Co – all patients. One group – infusion of 1 g Podophyllum qd after irradiation. Another group - 1 g acethyl-homocystein-thilactone (AHCT) prior to radiation and Podophyllum after irradiation. The total dosage was between 30 and 50g Pod. and 30 and 50g AHCT.
    - Results: The survival rate after three years was increased up to 15%. An earlier study revealed a five-year-survival rate of 23%.
- **Infectious diseases:**
  - **Penile condyloma acuminata:**[1764]
    - Design:
    - Patients: Two hundred twenty seven men with penile condylomata acuminata.
    - Therapy: Alcoholic solutions with 20% podophyllin from Podophyllum peltatum and Podophyllum emodi, 8% podophyllotoxin, or 8% colchicine, topically.
    - Results: Effects in the treatment groups were statistically alike. 43% permanent cure frequency after 1-2 applications. Local side effects were absent after only half the series of colchicine applications, whereas as much as about 3/4 of the treatment course with podophyllin and pure podophyllotoxin could be completed without provoking discomfort. Warts in the urinary meatus healed significantly less well than warts on the other genital mucous membranes. Eighty-nine per cent of patients who had previously been cured of concylomata became wart-free after 1-2 treatments, as opposed to only 40% of those who had never had this wart type previously. The use of the commercially available colchicine offers an opportunity to establish a standardized therapy; following application of an 8% solution, rinsing off should be performed after 6-8 hours.
  - **Penile warts:**[1765]
    - Design: Prospective double-blind randomized clinical trial.
    - Patients: Three hundred fifteen patients with penile warts.
    - Therapy: Self treatment with podophyllotoxin 0.5% (PDX 0.5%), podophyllin 0.5%, or with podophyllin 2.0% sourced from Podophyllum emodii x 5 weeks.
    - Results: At 5 weeks no significant differences were found in the extent of healing of warts or in side effects for the three treatment groups. Penile warts in selected cases can be safely treated with 0.5-2.0% podophyllin self applied by the patient at a fraction of the cost of commercially available podophyllotoxin. The shelf life of the podophyllin extracts is at least 3 months.
- **Rheumatology:**
  - **Rheumatoid arthritis:**[1766]
    - Design: Double-blind placebo-controlled clinical trial.
    - Patients: Thirty patients with rheumatoid arthritis.
    - Therapy: CPH 82 (podophyllum derivatives – semisynthetic lignan glycosides) (Conpharm AB) x 12 weeks.
    - Results: Patients treated with CPH 82 showed a statistically significant improvement in most clinical and immunological variables. Some patients treated with CPH 82 reported gastrointestinal discomfort (diarrhea and abdominal pain).

Pharmacy: Age slowly lessens the toxicity of Podophyllum, sometimes taking up to two years to dry before becoming tolerable. Podophyllum is listed by the FDA as an unsafe herb.

1:10 tincture: 1-10 drops/day

Fluid extract: 1-5 drops/day
Powder: 5-20 grains/day

Drug Interactions:[1767]

- **NaCl:** Common table salt increases its purgative power.
- **Lobelia, Ipecac, Leptandra, henbane and Belladonna** render its cathartic effect milder.

Contraindications: Brinker contraindicates the use of Podophyllum internally for gallstones, intestinal obstruction, in debilitated patients and pregnancy. He contraindicates the topical use near the eyes, in diabetic patients or on moles, birthmarks, inflamed/irritated verrucae, over large areas or for excessive periods of time.[1768]

Toxicity: Pregnant women should not take Podophyllum. Podophyllin and podophyllotoxin are embryocidal in animals and humans. Cook described the effects of internal use of the fresh root as producing nausea, severe vomiting, burning at the precordia, and violent catharsis, with tormina and watery (sometimes bloody) stools. These symptoms are liable to continue for eight or twelve hours; and to be followed by swelling, redness, dryness and tenderness of the lips and whole mouth, tenderness and heat throughout the bowels, extreme prostration, with perhaps bloating of the face and other parts of the body. These feelings sometimes are not recovered from for several days, and the gastric tenderness may last a number of weeks.

[1758] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

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[1767] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 148

[1768] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 147-148

Populus spp. Salicaceae (Willow Family)

Populus alba/P. tremuloides/P.nigra/ P. balsamifera
Common name: Poplar, Aspen, Balm of Gilead (P. balsamifera only)

Habitat: The tree grows in lower Canada & in the Northern & middle states of the Unites States.

Botanical description: This tree grows to a height of 20 to 50 feet with a diameter of 8 to 12 inches. The bark is smooth & greenish-white. The leaves are orbicular-cordate, smooth on both sides, dark green, 2-2.5 in. long & 1.25 in wide on long slender petioles. The bark is collected in early spring.

Parts used: Bark

Constituents:

- Phenolic glycosides: Salicin & Populin.
- Tannins.
- Lignans (in P. nigra).

Pharmacology:

Phenolic glycosides are found in the highest concentration within the young sticky buds, & are the main active constituents within Populus spp. Populus contains salicin, which is converted in the gut to salicylic acid. Salicylic acid is anti-inflammatory, anti-pyretic, analgesic, & anti-rheumatic. Aspirin is made of salicylic acid with an additional acetyl goup to help in getting salicylic acid across the blood brain barrier. Although no clinical trials have been conducted w/ Populus, it can be used in place of aspirin in the management of minor pain conditions. For a further understanding & appreciation of phenolic glycosides & their mechanism of absorption, please see the monograph on Salix alba.

Medicinal actions: Anti-inflammatory. Anodyne. Astringent. Diuretic. Stimulant. Anti-pyretic. Anti-rheumatic.

Current & Traditional Medicinal Use:

Populus is specifically indicated in cases characterized by: extreme debility & impairment of digestion; tenesmic vesical irritation; or tenesmus after micturition.

The inner bark is thought to be an efficient & pleasant astringent tonic, w/ an affinity for the mucosal membranes of the pelvis. Populus has also been used as a remedy in the treatment of reproductive disorders characterized by: nervous & hysterical mental states, stubborn uterine congestion, prostatic hypertrophies, chronic & purulent ophthalmia, or sub-acute gonorrhea. Poplar d/t its tonic action, made it useful as an addition to stonger herbs in treating conditions of the stomach.

The buds of P. balsamifera were observed to be stimulating to the mucous membranes & kidneys, having an influence on the circulation, & acting particularly on respiratory passages.

- **Gastrointestinal Conditions:** Populus was often used to promote appetite & digestion in all lax conditions of the stomach. Balm of Gilead has been considered to be one of the best tonics in cases of sub-acute & chronic diarrhea, scrofulous looseness of the bowels, & in diarrhea that arises from laxity of the stomach w/ associated indigestion.
- **Genitourinary Conditions:** Populin, the active phenolic glycoside of Populus, has an affinity for the GU tract, & was thought to stimulate the recuperative powers of the kidney when undergoing granular degeneration. Because of its gentle action upon the kidneys, Populus was used in chronic oliguria & lumbalgia. Balm of Gilead was highly commended in edematous dropsy, where it acts as a kidney tonic when combined w/ stronger tonics. As a diuretic, it is of benefit in: urinary affections, gonorrhea, gleet, etc. Populus also helps to reduce tenesmic spasm of the vesicles & for tenesmus occurring after urination. When combined w/ Uva ursi or Epigea repens, Balm of Gilead was used as a tonic for catarrh of the bladder & similar renal difficulties. In addition, P. balsamifera was thought to be only suited in cases characterized by much torpor, & then should be combined w/ relaxant diuretics. This bark is an excellent inclusion in formulas for urinary tract infections. The bark will lessen the inflammation & associated pain of cystitis while gently stimulating the flow of urine thereby promoting cleansing of the urinary tract. Populus will also help to restore kidney function after infection, inflammation or degeneration.
- **Gynecologic Conditions:** Populus was used with much advantage in leucorrhea, both inwardly and by injection, and in all female difficulties connected with laxity, as it soothes while it tones, and is not liable to confine the bowels.[1769]
- **Inflammatory Conditions:** Poplar bark was considered a tonic & febrifuge, having been used in intermittent fever with advantage. An infusion of it was reputed a valuable remedy in emaciation & debility, after protracted fevers. In purely chronic forms of rheumatism, P. balsamifera were added to form a fair stimulating addition to such articles as Cimicifuga & Phytolacca.
- **Pulmonary Conditions:** These buds of P. balsamifera were used to promote expectoration & give a tingling sensation in the bronchi & the lungs. It was used to make an excellent stimulating addition to expectorants that are more relaxing & tonics for old coughs & dry asthma, with pulmonic debility.

Current Research Review:

- Search of Medline yielded no human studies as of September 2002.

Pharmacy:[1770]

- 5-10 g herb qd

Contraindications/Toxicity:

P. balsamifera should never be employed in recent or irritable coughs, or in any in flamed condition of the organs of respiration.[1771] Caution in the use of Populus nigra externally due to occasional skin reactions caused by the salicylates.[1772]

[1769] Cook

[1770] *PDR for Herbal Medicines*. Medical Economics Company, Montvale, NJ, 1998:1060.

[1771] Cook

[1772] Brinker F. *Herb Contraindications and Drug Interactions.* Eclectic Medical Publications, Sandy, OR ,1998:38

Propolis

Common name: propolis

Habitat:

Botanical description:

Parts used: resin

Constituents:[1773]

- Flavonoids: quercetin, apigenin, galangin, kaempherol, luteolin, etc.
- Phenols: caffeic acid ester
- Terpenes

Pharmacology

Caffeic acid phenethyl ester (CAPE) inhibits the lipoxygenase pathway of arachidonic acid resulting in anti-inflammatory activity. CAPE also has anticarcinogenic, antimitogenic and immunomudulatory actions. Compounds in Propolis also have Antimicrobial actions although the mechanism is not known.

Medicinal actions: antimicrobial

Traditional Medicinal Use: No information is provided in the selected references.

Current Medicinal Use:

- **Dental Conditions:** A preliminary controlled study found that propolis mouthwash following oral surgery significantly speeded healing time as compared to placebo. [1774]

Current Research Review:

- **Dermatology:**
  - **Minor burns:**[1775]
    - Design: Controlled clinical trial
    - Patients: Patients with minor burns (less than 20% total body surface area) within 48 hours post-injury.
    - Therapy: High-grade Brazilian propolis skin cream – experimental, silver sulfadiazene (SSD) – control. Propolis cream and SSD applied directly to the wound q3d.
    - Results: Preliminary results do not show any significant difference in microbial colonization between wounds treated with SSD and propolis skin cream, however wounds treated with propolis cream showed less inflammation and more rapid cicatrization.
  - **Post-surgically:**[1776]
    - Design: Clinical trial
    - Patients: Patients operated for goiter, patients with wounds and ulcerations difficult to heal, patients with non-specific rectal inflammation. Patients with H. pylori (propolis was used as supplemental treatment in this case).
    - Therapy: Propolis
    - Results: Propolis was found to be effective, well-tolerated with minimal side-effects. Authors concluded that preparations of propolis can be successfully used in surgery.
- **Dentistry:**
  - **Dentinal hypersensitivity**:[1777]
    - Design: Open clinical trial.
    - Patients: 26 female subjects, 16-40 yo, with dentinal hypersensitivity.
    - Therapy: Propolis
    - Results: Eighty five percent of the subjects were highly satisfied at 4 weeks follow-up. Authors found that propolis had significant effect on dentinal hypersensitivity during the study period.
  - **Plaque:**[1778]
    - Design: Double-blind, randomized, controlled, parallel, clinical trial
    - Patients: Subjects were studies on de novo plaque formation.
    - Therapy: Propolis-containing mouth rinse. Positive (chlorhexidine mouthrinse) control and negative control were used.

        - Results: Propolis-containing rinse was marginally better than the negative control, but difference was not significant. Chlorhexidine mouth rinse was significantly better than the others in plaque inhibition.
    - **Periodontitis:**[1779]
        - Design: Clinical trial.
        - Patients: Patients with acute, exacerbated, and chronic forms of periodotitis.
        - Therapy: Four percent alcohol solution of bee glue added to the filler for root-canal fillings.
        - Results: Technique was found to be highly effective. The filler has anesthetizing effect; it resolves behind the root canal apex within 3-12 months, is preserved in the root canals, does not stain the tooth crown, promotes regeneration of the bone structures, and prolongs the effect of 0.4% water-alcohol been glue emulsion.
    - **Gingivitis:**[1780]
        - Design: Clinical cases
        - Patients: Patients with chronic gingivitis and stomatitis of different etiology
        - Therapy: Propolan – propolis containing therapy.
        - Results: Propolan is found to be effective
- **Infectious diseases:**
    - **Genital herpes (HSV):**[1781]
        - Design: Randomized, single-blind, masked investigator, controlled multi0centre trial
        - Patients: Ninety men and women with recurrent genital HSV type 2.
        - Therapy: Canadian propolis ointment containing natural flavonoids – experimental group, acyclovir ointrment group, and placebo group. (Thirty patients/group). Ointments were applied topically QID x 10 days in men, and tampons with ointments were inserted vaginally QID x 10 days in women.
        - Results: Propolis ointment was more effective than both acyclovir and placebo ointments in healing genital herpetic lesions, and in reducing local symptoms. The healing process appeared to be faster in the propolis group.
    - **Immunostimulation:**[1782]
        - Design: Open prospective monocentric clinical trial.
        - Patients: 10 healthy subjects, 18-45 yo, normal weight, either sex.
        - Therapy: 500 mg Propolis XNP (2 caps) po am x 13 days.
        - Results: Cytokine secretion capacity but not the cytokine plasma levels increased significantly during therapy. Authors concluded that prophylactic application of propolis led to a time dependent enhanced immune reactivity without undesired side effects.
    - **Vaginal infections/cervicitis:**[1783]
        - Design: Randomized double-blind controlled clinical trial.
        - Patients: Patients with acute cervicitis and with vaginal smears with positive cultures of some kind of infection.
        - Therapy: Vaginal dressings using 5% propolis – experimental group qd x 10 days. Lugol dressings – control group.
        - Results: All patients in the experimental group had no other symptoms after treatment was completed since negative results were attained in 100% of smears. Ninety percent achieved a total epithelization of the cervix within 10 days of treatment.
    - **Giardiasis:**[1784]
        - Design: Controlled clinical trial
        - Patients: One hundred and thirty eight patients: 48 children and 90 adults.
        - Therapy: "Propolisina": 10%, 20%, and 30% propolis extract – experimental group. Tinidazole (imidazole derivate) – control.
        - Results: Children treated with 10% propolisina – 52% cure rate, adults treated with 20% propolisina – results similar to tinidazole, adults treated with 30% propolisina – 60% cure rate vs 40% with tinidazole.
- **Rheumatology:**
    - **Rheumatic diseases**:[1785]
        - Design: Single-blind, placebo-controlled clinical trial
        - Patients: 190 patients with pain and/or inflammation of the organs of movement.
        - Therapy: Purified propolis and propolis saturated with anti-inflammatory trace metal elements. Propolis saturated with trace metal elements. Poplar bud ointment saturated with trace metal elements. Materials were applied topically and by iotophoresis.
        - Results: All therapy choices significantly improved symptoms. The preparations saturated with metallic ions were more effective. Side effects were not observed.
- **Ophthalmology:**
    - **Ophthalmic herpes sequelae:**[1786]

- Design: Controlled clinical trial.
- Patients: Thirty five patients with postherpetic trophic keratitis and 20 patients with postherpetic nebula
- Therapy: Ocular medical propolis films (OMF) applied behind the lower eyelid hs x 10-15 days.
- Results: OMF accelerated the cornea epithelization. Epitheliopathy and micropoint edema of cornea epithelium rapidly disappeared. Time of patients recovery reduced nearly twice in comparison with the control group; visual acuity increased on the average in two times. All patients endured the treatment well.

- **ENT:**
  - **Rhinopharyngitis:**[1787]
    - Design: Controlled clinical trial
    - Patients: Pre-school and school children with acute and chronic inflammatory diseases of upper airways treated during the whole cold season 1994-1995.
    - Therapy: Aqueous propolis extract NIVCRISOL topically.
    - Results: Treatment was found to be effective. The number of cases with acute or chronic symptoms was decreased; there was also decrease and sometimes suppression of the viral-microbial flora carriage of the upper airways. Therapy was tolerated well.
- **Pulmonology:**
  - **Lung diseases:**[1788]
    - Design: Clinical trial
    - Patients: One hundred four patients with chronic non-specific pulmonary diseases (ChNPD)
    - Therapy: Apitherapeutic coplex (bee venom and bee keeping apiculture produce)
    - Results: Apitherapy was found to be highly effective in a combined treatment of ChNPD patients. Stimulating and normalizing influence on the function of adrenals was noted.

Pharmacy:

Contraindications: Propolis may cause contact dermatitis.[1789]

Toxicity:

[1773] PDR for Nutritional Supplements, Medical Economics, Montvale, NJ. First Edition, 2001

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[1785] Siro B, Szelekovszky S, Lakatos B, et al. Local treatment of rheumatic diseases with propolis compounds. *Orv Hetil* 1996; 137(25):1365-70.

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[1788] Masterov GD, Mersesian ON. The role of apitherapy in the combined treatment of patients with chronic non-specific lung diseases. *Lik Sprava* 1995;(3-4):155-8.

[1789] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 38

Prunus serotina — Rosaceae

Common name: Wild cherry/Virginia prune bark

Habitat:

Botanical description: Lofty black cherry tree. The wood is dark red. Bark is thick, reddish, fragrant with a rough dark corticle separating in narrow layers. Leaves are oblong, lanceolate, tapering, serrate with short and incurved teeth, thick, smooth, dark green, shining, 3-4 inches long. Flowers are small, white, rosaceous. Fruit is a small, round, black cherry, with a round and smooth drupe. The tree blooms in May, ripens its fruit in August and September.
Note: Prunus virginiana is the smaller choke cherry.

Parts used: Bark

Constituents:

- Prunasin (cyanogenic glycoside which is), Cyanogenic glycosides:
  prunasin yielding 0.5-1.5%, 50-150 mg HCN/100 gm (hydrolyzed by prunase to hydrocyanic acid)
- benzaldehyde, eudesmic acid, p-coumaric acid, scopoletin, tannins, sugars

Pharmacology:

It is of interest that Prunus bark contains cyanogenic glycoside, particularly prunasin, and that Prunus has a sedating yet tonifying influence on circulation. Cyanide is required in very small amounts by enzymes involved in the clotting cascade. Minute amounts of cyanide circulate in the blood stream for this purpose. These glycosides, once broken apart in the body, act by quelling spasms in the smooth muscles lining bronchioles, thereby relieving coughs.[1790] Of course, large amounts of cyanide are toxic to the CNS producing convulsions and death very quickly from respiratory paralysis.

Medicinal actions: Antitussive, sedative, astringent

Traditional Medicinal Use:

The specific indications of Prunus are: rapid, weak circulation,; continual irritative cough with profuse muco-purulent expectoration; cardiac palpitation, from debility; dyspnea; pyrexia; loss of appetite; and cardiac pain.[1791]

Cook described Prunus bark as a mild, soothing, slightly astringent tonic.[1792] King further differentiated these influences as a tonic and stimulating influence on the digestive apparatus, and a simultaneous sedative action on the nervous system and circulation. It was considered valuable cases where it is desirable to give tone and strength to the system, without, at the same time, causing too great an action of the heart and blood vessels, such as during convalescence from inflammatory and febrile diseases. King considered its chief property is its power of relieving irritation of the mucous surfaces, making it an admirable remedy in many gastro-intestinal, pulmonic, and urinary troubles and he felt that it is best adapted to chronic troubles.[1793]

- Gastrointestinal Conditions: For chronic gastritis with indigestion and during convalescence Prunus was considered an excellent tonic particularly when most other tonics were difficult to tolerate.
- Nervous Conditions: Prunus was chiefly valued for the soothing influence which accompanies its tonic action; for while it gently improves appetite, digestion, and the general strength, it quiets nervous irritability and arterial excitement. For example, Prunus was used to settle palpitations secondary to nervous stimulus from fever or inflammation.
- Pulmonary Conditions: Prunus was considered a superior herb for irritable coughs, whether acute or chronic.
- Topical Applications: Outwardly, Prunus was used to make a soothing and cleansing application to irritable and weak sores, especially those of a scrofulous character in painful ulcers following moderate burns, and in inflamed and painful chancres, especially in combination with Nymphea.[1794]

Current Medicinal Use:

- Pulmonary Conditions: Prunus strongly sedates the cough reflex. For this reason, the primary use for Prunus is to allay irritated coughs. This action is most desired when coughs disturb sleep or post-infection with a lingering dry cough. It reduces nervous irritability and acts as a soothing mild astringent. Used acutely it may act as an tonic expectorant by reducing paroxysms of coughs, acting as an astringent in mucous-laden lungs and bronchioles. In general, Prunus gently improves appetite, digestion, and general strength. These latter actions give Prunus added indication in the post-convalescence stage of bronchitis.

Current Research Review:

- Search of Medline revealed no human trials as of October 2002.

Pharmacy: The astringent impression it exerts is scarcely noticeable unless the bark is decocted. Decoction removes the soothing and volatile qualities, which are preserved by infusion.

Infusion: 1tsp dried bark/cup; 1 cup TID
1:5 tincture: 2-4 ml TID

Contraindications: Depressed and sluggish conditions do not respond well to Prunus because of its sedating influence on the nervous system and circulation. Prunus should be avoided during pregnancy or for prolonged periods of use due to the cyanogenic glycoside prunisin.[1795]

Toxicity: No information is currently available from the selected resources

[1790] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[1791] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

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[1794] Cook

[1795] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 135

Pulmonaria officinalis

Boraginaceae (Borage Family)

Common name: Lungwort, Spotted Lungwort, Maple Lungwort, Jerusalem Cowslip, Spotted Comfrey.
Note: Do not confuse w/ Sticta pulmonaria, which is also called Lungwort. This herb is also used for respiratory complaints, but is instead in the Lichenes (Lichen) family.

Common Trade Name: Lungwort Compound (formerly Bleeders Blend) – as tablets & extracts.[1796]

Habitat: Throughout Europe, including Britian.

Botanical description: P. officinalis is a perennial standing about 1 foot high. Rhizome is thin & branched, first producing flowering shoots & then the leaf rosettes. The shoots are fresh green & covered in glandular hairs. Stems are erect, slightly angular & cordate to ovate, acute, & are more long than wide w/ whitish spots. Leaves are alternate, tapering into a winged stem & are sharply pointed & lanceolate. Only the lower leaves have some pinnatifid ribs. The blue, later blue-violet flowers are in terminal curled cyme-like inflorescence on flowering branches in May. The calyx is fused & has five tips. The corolla is fused into a tube & the five tips are rotate. There are 5 stamens & a 4-valvular ovary w/ a single stylet, that can be either short or long. There are 5 tuffs of hair at the enterance to the corolla tube. The fruit consist of 4 nutlets, which are 3.5 -4.0 mm in length, glabrous, glossy brown to black, mildly keeled w/ a distinct ring.[1797]
Lungwort prefers shady areas, & is w/o any particular odour.

Parts used: Leaves. Dried & fresh aerial parts.

Energetics: Particular affinity for the chest & lungs, esp. if there is associated bleeding.[1798]

Constituents

- Mucilages: polygalacturonane, arabinogalactans, rhamno- galacturonane.
- Flavonoids: in particular O-glycosides of the kaempferols & quercetin.
- Silicic acid: more than 2.5% soluble silicic acid.
- Allantoin.
- Caffeic acid derivatives: chlorogenic acid, rosmarinic acid.
- Tannins.
- Saponins.
- Vitamins: Vit C & B**.** [1799]
- Minerals: Iron, Copper, Silver, Manganese, Derotin, Titan, Nickel, & others.[1800]

Pharmacology:

Anti-tussive action is thought to be d/t the presence of mucilages, which hydrate & soothe irritated tissues.

Emollient action can be attributed to the content of allantoin, which is anti-inlammatory & soothing.

During topical application, astringent & anti-inflammatory actions are attributed to the content of tannins & flavonoids.; w/ the tannins causing precipitation of protein in the surrounding fluids to form a protective coating over a wound.[1801]

Vitamin & mineral content also essential in the healing of inflamed tissues; either via stimulation of the immune system, acting as anti-oxidants, or both.

Medicinal actions: Emollient. Expectorant. Anti-hemorrhagic. Anti-tussive. Astringent. Demulcent. Pectoral. Vulnerary.

Current & Traditional Medicinal Use:

- **Gastrointestinal Conditions:** Pulmonaria is astringent, making it useful in cases of diarrhea, esp. in kids, & in treating hemorrhoids.
- **Genitourinary Conditons:** To soothe & astringe inflamed tissues of the kidneys & associated urinary tract.
- **Pulmonary Conditions:** Appling Doctrine of Signatures, Lungwort can be used in chest conditions characterized by congestion; where the white spots on the leaves symbolize localized areas of lung congestion. As an expectorant, Pulmonaria is most indicated in catarrhal lung conditions; such as: asthma, bronchitis, coughs, colds, & influenza. Lungwort is a gentle & soothing tonic, making it most helpful when the lungs &/or throat are inflamed & congested. Pulmonaria seems to seal weakened tissues & take away inflammation.
- **Topical Applications:** As a vulnerary, external application is useful for dressing & washing wounds, swellings, & in treating amenorrhea, as it is also antiseptic. Lungwort is thought to combine well w/ Marrubium and Lobelia.

Current Research Review

- Search of Medline yielded no human studies as of September 2002.

Pharmacy:

- Infusion: 1.5 g qd (1 tsp = 0.7 g)[1802]
  Solvent: Best in water.[1803]

Toxicity/Contraindications Unlike other members of the Boraginaceae family, Pulmonaria does not contain pyrrolizidine alkaloids.

[1796] *Professional's Handbook of Complementary & Alternative Medicines*. Springhouse, Springhouse, Pennsylvania, 1999:403.

[1797] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ, 1998:1073.

[1798] Hutchens AR. *Indian Herbalogy of North America*. Shambhala, Boston, Mass, 1991:188.

[1799] Hutchens, 188.

[1800] Hutchens, 188.

[1801] *Professional's Handbook of Complementary & Alternative Medicines*, 402.

[1802] PDR, 1073

[1803] Hutchens, 187-8.

Prunus africanum/Pygeum africanum — Rosaceae

Common name: Pygeum, bitter almond, African plum tree

Habitat: Native to Africa.[1804]

Botanical description: Evergreen tree that grows to 120-150 ft in height. It has pendulous branches with thick, oblong-shaped, leather-like, mat-colored leaves and creamy white flowers. The ripe fruit (drupe) resembles a cherry. Bark is dark-brown to gray. [1805]

Part used: bark

Energetics:

Constituents: [1806]
The major active components of the bark are:

- lipid-soluble pentacyclic triterpenes
- sterolic triterpenes
- fatty acids
- esters of ferulic acid

Pharmacology:

- Virtually all of the pharmacological research has featured a pygeum extract standardized to contain 14% triterpenes including beta-sitosterol and 0.5% n-docosanol. This extract has been extensively studied in both experimental animal studies and clinical trials with humans. The primary target organ for pygeum's effects in males is the prostate.[1807]
- Chemical analysis and pharmacological studies indicate the lipophilic extract of pygeum bark has three categories of active constituents: phytosterols, pentacyclic terpenes, ferulic esters. [1808]
  - The phytosterols, including beta-sitosterol, have anti-inflammatory effects by interfering with the formation of pro-inflammatory prostaglandins that tend to accumulate in the prostate of men with BPH.
  - The pentacyclic terpenes have an anti-edema, or decongesting, effect. [1809] The pentacyclic triterpenes exhibit anti-inflammatory effects within the prostatic epithelium and may be responsible for stimulation of the secretory cells of the prostate, seminal vesicles, and bulbourethral glands. [1810]
  - Ferulic esters reduce levels of prolactin and also block cholesterol in the prostate. These metabolites of cholesterol initiate degeneration of prostatic cells which can promote prostatic enlargement. Drugs which lower cholesterol levels have been shown to have a favorable influence on BPH, preventing the accumulation of cholesterol in the prostatic cells and limiting subsequent formation of damaging cholesterol metabolites. Prolactin increases uptake of testosterone in the prostate, and cholesterol increases binding sites for testosterone and its more active form dihydrotestosterone.
- The fatty acid components are similar to those of Serenoa repens and may exert similar effects as well as improve the oral bioavailability of other components of the lipophilic extract. [1811]

Medicinal actions: anti-inflammatory, decongestant

Traditional medicinal uses:

- The powdered bark of pygeum is used by the natives of tropical Africa as a treatment for urinary disorders, often given with a palm oil or milk. [1812]

Current medicinal uses:

- Prostate disorders[1813]
  - BPH - COCHRANE REVIEW [1814]: A total of 18 randomized controlled trials involving 1562 men met inclusion criteria and were analyzed. Only one of the studies reported a method of treatment allocation concealment, though 17 were double-blinded. There were no studies comparing Pygeum africanum to standard pharmacologic interventions such as alpha-adrenergic blockers or 5-alpha reductase inhibitors. The mean study duration was 64 days (range, 30-122 days). *Compared to men receiving placebo, Pygeum africanum provided a moderately large improvement in the combined outcome of urologic symptoms and flow measures.* Men using Pygeum africanum were more than twice as likely to report an improvement in overall symptoms. Nocturia was reduced by 19%, residual urine volume by 24% and peak urine flow was increased by 23%. Adverse effects due to Pygeum Africanum were mild and comparable to placebo.
  - Prostatitis

- Male infertility and impotence[1815]

Pharmacy:

- Standardized extract:
    - Lipophilic extract (standardized to 14% of triterpens, including β-sitosterol and 0.5% *n*-docosanol): 100-200mg/day in divided doses. Crude herb is not used.[1816]
    - BPH: 50-100 mg BID.[1817]
    - Prostatitis: 50-100 mg BID. [1818]

Drug interactions: No interactions are known to occur, and there is no known reason to expect a clinically significant interaction with pygeum.[1819]

Contraindications: No interactions are known to occur, and there is no known reason to expect a clinically significant interaction with pygeum.[1820]

Toxicity/Side effects:[1821]

- Acute or chronic toxicity tests in animal trials are negative. No significant toxicity was demonstrated in human clinical trials. Most common SE: gastrointestinal irritation (symptoms range from nausea to severe stomach pain)

[1804] Joseph E. Pizzorno Jr, Michael T. Murray (eds.), *Textbook of Natural Medicine*, 2nd ed., Churchill Livingstone, Edinburgh, 1999, Vol. I, p. 903.

[1805] Ibid.

[1806] Ibid.

[1807] Ibid., p. 904.

[1808] Michal T. Murray, *The Healing Power of Herbs*, rev 2nd ed., Prima Publishing, Rocklin, CA, 1995, pp. 286–93.

[1809] Ibid.

[1810] Pizzorno, p.904

[1811] Ibid.

[1812] Murray, p.287

[1813] Pizzorno, p. 904.

[1814] Wilt T. "Pygeum africanum for Benign Prostatic Hyperplasia" (Cochrane Review). Cochrane Database Syst Rev. 2002;(1):CD001044.

[1815] Pizzorno, p. 903.

[1816] Ibid., p. 907.

[1817] Melvyn R. Werbach and Michael T. Murray, 2nd ed., *Botanical Influence on Illness: A Sourcebook of Clinical Research,* Third Line Press Inc., Tarzana, California, 2000, p.118.

[1818] Ibid, p.542.

[1819] "Monograph: Pygeum," *Natural Medicine Database,* April 19, 2002, <http://www.naturaldatabase.com/monograph.asp?mono_id=388&hilite=1> (April 19, 2002).

[1820] Ibid.

[1821] Ibid, p.118.

Quercus robur/ Q. alba

Fagaceae

Common name: Q. robur(common oak) Q. alba (white oak)

Habitat: Throughout Europe, cultivated elsewhere

Botanical description: Oak is a large tree that grows very a wide trunk. The leaves are green with largely toothed margins. The male flower is a drooping catkin, the female flower is a cup-shaped cluster. The bark is greyish on the outside with a reddish-brown inner surface with longitudinal striations. The taste is astringent.

Part used: Bark

Historical Use: The Greeks held the Oak sacred, the Romans dedicated it to Jupiter, and the Druids venerated it. Elders of the Saanich and Cowichan Coast Salish people of southern Vancouver Island treat many ailments with bark preparations. Interviews with two elder Salishan women revealed that: respiratory ailments were treated with bark of Quercus garryana.[1822]

Constituents: tannins (up to 15-20% consisting of phlobatannin, ellagitannins, and gallic acid)

Medicinal actions: Astringent, hemostatic, antiseptic

Medicinal use: Quercus robur is used almost exclusively for the treatment of inflammation that has resulted in excessive discharges (mucus, water, blood). Quercus is a strong astringent and antiseptic and a mild tonic to the tissues which it contacts. Quercus seems to be most efficacious in situations of congested, swollen tissues. In small doses, Quercus acts as a tonic for debilitated tissues and atonic organs with discharge (i.e. passive hemorrhage from the bowel, uterus or lungs).

- PulmonaryCondtions: Quercus is useful in the treatment of pharyngitis and diptheria as a gargle, in the treatment of diarrhea as tea or tincture.
- Gastrointestinal Conditions: It is used in the treatment of hemorrhoids as an enema, suppository, or compress. In addition, Quercus is effective treatment for aphthous stomatitis. In cases of intestinal hemorrhage or diarrhea, Quercus combines well with a carminative such as cinnamon or fennel.

According to Mills and Bone:[1823]

- Gastrointestinal Conditions: Indications for tannins include inflammation of the upper digestive tract and diarreha following gastrointestinal inflammation.
- Topical Applications: Tannins are also indicated for open, discharging lesions, wounds, hemorrhoids and third degree burns.

According to King:[1824]

Oak bark is slightly tonic, powerfully astringent, and antiseptic. In *colliquative sweats,* the decoction is usually combined with lime-water.

Specific Indications and Uses: Relaxation of mucous membranes, with unhealthy discharge; ulcerations, with spongy granulations.

- Gastrointestinal Conditions: It is useful, internally in *chronic diarrhoea, chronic mucous discharges, passive hemorrhage*s, and
- wherever an internal astringent is required. It is used as an astringent injection for *prolapsus ani, hemorrhoids*, etc. In sickly, debilitated children, and in severe *diarrhoeas*, especially when the result of *fevers*, the decoction, given internally, and used as a bath to the body and limbs, 2 or 3 times a day, will be found very efficient. When given for *diarrhoea* or *dysentery*, it should be combined with aromatics, and sometimes with castor oil.
- Gynecologic Conditions: It is used as an astringent injection for *leucorrhoea* (a douche rather than an enema in this case)
- PulmonaryCondtions: It is, however, more generally used in decoction, as an external agent, which forms an excellent gargle for *relaxed uvula* and *sore throat*, a good stimulating astringent lotion for *ulcers* with spongy granulations. A coffee made from roasted acorns, has been highly recommended in the treatment of *scrofula (cervical tuberculosis lymphadenitis)*.
- Topical Applications: The ground bark, made into a poultice, has proved useful in *gangrenous* or *mortified conditions*. A bath is often advantageous in some *cutaneous diseases*. The green bark of elder and white oak bruised together, or in strong decoction, forms a very useful and valuable application to *abrasions*.

According to Scudder:[1825]

The Red Oak is not only astringent from its tannic acid, but it possesses other properties that will render it useful in some cases. Among them is its tonic influence, and its action upon skin and kidneys. I have used it in chronic eczema associated with Rumex, both as a local and internal remedy, with marked advantage. A combination of Quercus Rubra, Rumex and Alnus is my favorite remedy in obstinate cases of scrofula where there are old ulcers, feeble tissues and cicatrices. In these cases I use it as a local application and as an internal remedy.

Pharmacy: Tannins should be taken after food in most cases. For some lesions of the upper digestive tract, short-term use between meals or before food is justifiable. Long-term therapy with high doses of tannins is not advisable.[1826]

Powder:
1-2 g TID (Alschuler)
Decoction:
1 tsp. cup; 1 cup TID (Alschuler)
sig, 1 to 2 fluid ounces (King)
Extract:
from 5 to 20 grains (King)
1:5 tincture:
1-3 ml TID (Alschuler)
viij. of the fresh inner bark to Alcohol 76º Oj. Dose from gtts. v. to ss (Scudder)

Contraindications: The use of tannins is contraindicated or inappropriate in cases of constipation, iron deficiency and malnutrition.[1827]
Tannin rich herbs may reduce the absorption of alkaloids and other basic drugs through precipitation. Full baths for weeping eczema, fever, infections, stage 3 or 4 heart failre and stage 4 hypotonia are contraindications for Quercus as well.[1828]

Toxicity:

Rauwolfia serpentina

Apocynaceae

Common name: Indian Snakeroot

Habitat: Grows in India and SE Asia.

Botanical description: The leaves are lanceolate and ridged with smooth margins. Occasional flower heads appear on the stem and produce a cluster of bell-shaped flowers. The root is fine and branches to form several roots with rootlets.

Parts used: root

Constituents [1829]

- Alkaloids: Reserpine is the most widely used and studied preparation. Powdered Rauwolfia serpentina contains several alkaloids.Although individual Rauwolfia alkaloids differ slightly in chemical structure, they have similar actions, uses, and cautions.

Pharmacology: [1830]

The precise mechanism of the hypotensive action of Rauwolfia alkaloids has not been established. Rauwolfia alkaloids deplete catecholamine and serotonin stores in many organs, including the brain and adrenal medulla, and reduce uptake of catecholamines by adrenergic neurons. An increased sensitivity of the effector cells to catecholamines reportedly may result. Although the hypotensive effects of the Rauwolfia alkaloids appear to result largely from peripheral adrenergic blockade, CNS effects probably are also involved.

With repeated doses of Rauwolfia alkaloids, depletion of catecholamine stores occurs very slowly, resulting in a very gradual decrease in peripheral vascular resistance and blood pressure which is frequently associated with bradycardia. With prolonged therapy, venous dilation and peripheral pooling of blood reduce venous return to the heart and cause decreased cardiac output; a slight decrease in renal blood flow and glomerular filtration rate may result. With usual oral doses of the drugs, cardiovascular reflexes are only partially inhibited and postural hypotension usually does not occur.

Rauwolfia alkaloids also produce a tranquilizing effect, apparently due to depletion of serotonin and catecholamines in the brain. Convulsions and extrapyramidal reactions have occurred following large doses. Although small doses of the drugs may stimulate respiration, large doses produce respiratory depression. Decreased body temperature also may occur following large doses.

Sympathetic inhibition produced by Rauwolfia alkaloids also may result in vasodilation and increased cutaneous blood flow with resulting flushing, feeling of warmth, or nasal congestion. In addition to bradycardia, increased parasympathomimetic activity resulting from adrenergic inhibition produces increased GI motility, increased gastric acid secretion, and miosis.

During prolonged therapy, atrioventricular (AV) conduction time may increase, apparently due to an increase in the refractory period of the AV conduction system following depletion of myocardial catecholamine stores as well as adrenergic blockade. Sodium and water retention may occur in patients receiving Rauwolfia alkaloids, especially if a diuretic is not administered concurrently, and may result in tolerance to the hypotensive effect of the drugs. Rauwolfia alkaloids may increase prolactin secretion (dopamine is PRL inhibiting factor).

Only limited information is available on the pharmacokinetics of Rauwolfia alkaloids in humans. In one study in a small number of healthy individuals, peak blood concentrations of radioactivity occurred within 2 hours following oral administration of a single 0.25-mg dose of radiolabeled reserpine in an alcoholic solution.

The onset and duration of the pharmacologic effects do not appear to be related to alkaloid concentrations in the blood or brain. The full effects of fixed oral doses of the drugs are usually delayed for at least 2—3 weeks; CNS and cardiovascular effects may persist several days to several weeks after chronic oral therapy is discontinued.

Medicinal actions: Hypotensive

Traditional Medicinal Use: No information is available in King's or Cook's dispensatories.

Current Medicinal use:

- Behavioral and Psychological Conditions: Rauwolfia alkaloids have been used in the symptomatic treatment of agitated psychotic states such as schizophrenic disorders. Although other antipsychotic agents have generally replaced the alkaloids, Rauwolfia alkaloids may be beneficial in some patients who cannot tolerate other antipsychotic agents or who also require antihypertensive therapy.[1831]
- Cardiovascular Conditions: The main indication for Rauwolfia is hypertension as the alkaloids create a gentle hypotensive effect. Blood pressure will take 2-3 weeks to respond, but may return to pre-treatment levels several weeks after discontinuation of the Rauwolfia. Rauwolfia is also best used in combination with other anti-hypertensives in order to avoid large doses of it. By using moderate therapeutic doses, the maximum therapeutic effect of Rauwolfia may not be evident for 6-12 months after beginning continuous treatment with it. However, larger doses may cause nasal congestion, diarrhea, and depression.
  Rauwolfia alkaloids are used in the management of mild to moderate hypertension. In the stepped-care approach to antihypertensive drug therapy, adrenergic inhibitors including Rauwolfia alkaloids generally are considered step 2 drugs and generally are reserved for patients who fail to respond to nondrug therapies and who fail to respond to therapy with a step 1 drug

(e.g., diuretics, beta-adrenergic blocking agents, angiotensin-converting enzyme [ACE] inhibitors, alpha$_1$-adrenergic blocking agents).[1832, 1833]

Rauwolfia alkaloids are generally most effective when used with a diuretic. The use of a diuretic may prevent sodium retention, edema, and resulting tolerance, which may occur during Rauwolfia alkaloid therapy. Rauwolfia alkaloids also have been used with other hypotensive agents, permitting a reduction in the dosage of each drug and, in some patients, minimizing adverse effects while maintaining blood pressure control.[1834, 1835]

- Endocrine Conditions: Reserpine has been used as short-term adjunctive therapy in the treatment of tachycardia, palpitation, and psychological disturbances in patients with thyrotoxicosis; however, propranolol is the drug of choice. Reserpine may be useful in the management of thyrotoxicosis resistant to propranolol. Rauwolfia alkaloids do not affect the underlying disease, which must be treated with an antithyroid agent or other measures.[1836]

Pharmacy:

Indole alkaloids obtained from *Rauwolfia serpentina* or other *Rauwolfia* species are commercially available as a powdered dried whole root preparation of *Rauwolfia serpentina*, a partially purified alkaloidal fraction of *Rauwolfia serpentina* (Alseroxylon), and as pure alkaloids (deserpidine and reserpine).

Lactose, starch, or Rauwolfia serpentina containing a higher or lower alkaloid content is added to the commercially available product so that it contains 0.15—0.20% of the reserpine-rescinnamine group alkaloids, calculated as reserpine. Alseroxylon, an extract of *Rauwolfia serpentina* containing reserpine and other fat-soluble alkaloids, is standardized so that it contains 7.5—10% of the reserpine-rescinnamine group alkaloids, calculated as reserpine.

Begin with small doses and increase gradually until there is a drop in blood pressure or side-effects develop (nasal congestion, diarrhea, depression). A whole extract used in the powdered form is most desirable: 50-300 mg daily. The pure alkaloid reserpine is initially dosed at 0.5 mg daily for 1-2 weeks, which is then lowered to a maintenance dose of 0.1-0.25 mg daily.

Contraindications: Contraindicated in pregnancy (teratogen and abortifacaent), depression, peptic ulcers, hyperprolactinemia.

Toxicity: Signs of toxicity include: sedation, depression, nightmares, abdominal cramps, diarrhea, gastrointestinal ulceration and hemorrhage, water retention, nasal congestion, flushing of the skin, pinpoint pupils, hypotension, bradycardia, vertigo, stupor, tremors, coma.

[1829] American Hospital Formulary Service Drug Information, a Drug Information Reference from the (7272 Wisconsin Avenue Bethesda, MD 20814 301–657–3000). . Accessed 9.30.01.

[1830] American Hospital Formulary Service Drug Information, a Drug Information Reference from the (7272 Wisconsin Avenue Bethesda, MD 20814 301–657–3000). . Accessed 9.30.01.

[1831] Ibid

[1832] Ibid

[1833] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 202

[1834] American Hospital Formulary Service Drug Information, a Drug Information Reference from the (7272 Wisconsin Avenue Bethesda, MD 20814 301–657–3000). . Accessed 9.30.01.

[1835] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 202

[1836] American Hospital Formulary Service Drug Information, a Drug Information Reference from the (7272 Wisconsin Avenue Bethesda, MD 20814 301–657–3000). . Accessed 9.30.01.

Rhamnus purshiana/ R. frangula — Rhamnaceae

Common name: Cascara sagrada (R. purshiana)/ Buckthorn (R. frangula)

Habitat: Native to the Pacific Coast of N. Amercia Rhamnus pushiana is a small tree that prefers the base and sides of canyons.

Botanical description: The tree grows to a height of 15-20 feet and has dark green elliptical leaves that are from 2-6 inches long. It bears small greenish flowers which are followed by black berries. The bark is shaved off. It has a smooth exterior that is covered with a removable greyish-white layer. Underneath, the inner bark is reddish-brown and the internal layer is pale yellowish-brown.

Parts used: Bark, collected in the spring and early summer when it is easily peeled from the wood. The bark is stored for at least one year (up to 3) in order to allow for the consitituents (most likely glycosides) that would otherwise cause griping to decompose. The collected bark is dried in the shade.

Historical uses: This plant was introduced to Europeans and Spaniards in the New World from Native Americans who used this bark extensively for constipation. They would make a decoction of the bark. In 1877, Dr. Bundy was introduced to cascara and make a fluid extract which quickly became a favorite laxative throughout the world.

Constituents: Anthroquinone glycosides (up to 10%), emodin glycosides, dianthrones, free aglycones.

Pharmacology: The anthraquinone glycosides are absorbed into the blood and are then re-secreted into the intestinal lumen which irritates the intestinal muscle and mucosa. The net result is intestinal contraction and increased intestinal secretions. The emodin glycosides tend to inhibit smooth muscle contraction which may help to mitigate the cathartic action of the anthraquinone glycosides.

Those agents that work to stimulate bowel function are divided into four groups based on the amplitude of action:

1. Aperients are mild laxatives that help to promote the natural movement of the bowels rather than provoking movement otherwise. e.g. psyllium seed, flax seed, fiber, Rumex, Foeniculum, Taraxacum, bile.
2. Laxatives are plants that actively promote bowel movement. Most contain anthraquinones and are well indicated for long term , chronic use. e.g. Cascara sagrada
3. Cathartics are plants that stimulate bowel movement but are stronger and quicker acting than laxatives. Usually within 3 hours of taking the plant, there is an uncontrollable urge to defecate. Many plants can have either a laxative or a cathartic action depending on the dose and timing of the doses used. e.g. Juglans nigra, Aloe vera, Cassia angustifolia (Senna).
4. Purgatives are plants cause drastic purgative action. These remedies were given as a way to clear the system of toxins and were usually given with emetics. These are not used in modern medicine because they are considered too toxic.

Medicinal actions: Laxative, bowel tonic, bitter

Traditional Medicinal Use:

- Gastrointestinal Conditions: Ellingwood described the laxative action of Cascara, small doses being mild enough for constipation in pregnancy. King did not describe these plants. Cook described the use of the berries of R. catharticus (R. frangula) and those being more severe cathartics than the bark.[1837] Ellingwood also indicated Cascara for catarrhal gastric or intestinal mucosa where it tonifies and astringes. Thus, it was used for diarrhea with these underlying characteristics.[1838]
- Hepatobiliary Conditions: Ellingwood described its use in chronic liver conditions with deficient biliary secretion.[1839]

Current Medicinal use:

- Gastrointestinal Conditions:
  R. purshiana stimulates the bowel through irritation. R. purshiana can be laxative or cathartic depending on the dose and the sensitivity of the person's bowel. Rhamnus is most indicated in chronic constipation. It is a gentle, tonifying laxative and is therefore well indicated in the elderly and pediatric populations. Overall, R. purshiana is stimulating and is thus most indicated in atonic constipation. For cases of chronic constipation, the use of R. purshiana can be curative if dosed appropriately. Note that because of the emodin glycosides and the tonifying effect on the intestines, Rhamnus may be useful in cases of diarrhea, due to lack of efficient contractions and over-secretion.

Current Research Review:

- Search of Medline revealed no clinical trials as of October 2002.

Pharmacy:

A dosage regimen for chronic constipation would start with once daily dosages for a week and increase weekly to a maximum of a three times daily dosage (if this is not too cathartic) and then decrease the dose in the same fashion.
Powdered bark: 1-2.5g/dose
Cascara liquid extract (BP): 2-5 ml/dose
Cascara Elixir (BP): 2-5/dose
Decoction of root: 1-2 tsp./cup/dose
1:5 tincture 0.5-1ml/dose.

Contraindications: Brinker speculates that Cascara should be avoided when nursing or during pregnancy. He further states that empirical evidence supports it not to be used in intestinal inflammatory disease, during menstruation, in diarrhea, debilitation, intestinal obstruction or abdominal pain of unknown cause, in children or for extended use. Finally, he indicates potential drug interaction with cardiac glycosides and diuretics.[1840]

Toxicity: Fresh Rhamnus purshiana bark is emetic and cathartic.

[1837] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*. Eclectic Medical Publications, Sandy, OR 1985 p.

[1838] Ellingwood, F. *American Materia Medica, Therapeutic and Pharmacognosy.* Ellingwood's Therapeutist, Chicago. 1919 p. 303

[1839] Ellingwood, p. 303

[1840] Brinker, F. *Herb Contraindications and Drug Interactions*. Eclectic Medical Publications, Sandy, OR 1998. p. 48-9

Rheum palmatum/ R. officinale — Polygonaceae

Common name: Turkey rhubarb

Habitat: Native to China now cultivated world-wide

Botanical description: The leaves of R. palmatum are palmate and rough; the root is thick and oval with long branches; the stem is erect, round, hollow, branched and grows to a height of 6-10 feet. The taste is bitter and the odor aromatic. The root is gathered when the plant is 6 years old in late summer.

Parts used: Rhizome

Constituents: Anthraquinone glycosides including emodin, tannins, stilbene derivatives, volatile oil, rutin, fatty acids, calcium oxalate

Pharmacology: No information is currently available

Medicinal actions: Astringent, aperient, tonic, stomachic, sialogogue

Traditional Medicinal Uses:

- **Gastrointestinal Conditions:**

According to Cook and Ellingwood, Rheum has the combination of relaxant, stimulant, and astringent qualities resulting in both tonification of deficiency and restraining excess.[1841,1842] The first two perform a mild tonic action and the last diminishes mucous discharges. Yet, Rheum rarely relieves constipation although it has an astringent quality.

Its action is mild leaving a soothing impression on the intestinal mucous membranes. However, the action is dose dependent: in small doses, it soothes cases of indigestion accompanied by acidity, gastric laxity, loose bowel movements in the morning, and sallow complexion. These effects are due to its cholagogue action. In larger doses it is gently laxative, increasing peristaltic motion and dislodging impacted feces (scybala) or other accumulations. In sensitive persons, or when the intestinal tract is sensitive, large doses may cause griping; and in febrile conditions the pulse is accelerated. Its action is peculiarly beneficial in diarrhea and dysentery by dislodging crude material. Whether for diarrhea or as a laxative the stimulated bowel movements are not watery, but consolidated.

To tell that Rheum has been absorbed one will note that the saliva becomes yellow quickly and the feces also become yellow in ten to twenty hours, or when it has passed through the bowels. It may even color the urine and perspiration.

Current Medicinal use:

Rheum palmatum is most often used for its laxative effects. The laxative effects are the result of the anthraquinone glycosides stimulating peristalsis. Depending on the dose given, Rheum will act as an aperient or a laxative. The presence of tannins lend an astringent effect. This astringent action has a tonifying effect and thus Rheum is especially well indicated in atonic constipation or diarrhea secondary to lack of tone. Rheum has an antiseptic action as well. The astringent, antiseptic and laxative actions also make R. palmatum well indicated in infectious diarrhea in order to both promote elimination while allaying the water, mucous, and blood loss from the intestines. The emodin and volatile oil lend an antispasmodic effect which helps to mitigate the gripping associated with laxative use. The bitter taste of Rheum enhances appetite and digestion. Rheum appears to specifically enhance gastric secretions and the secretion of bile (cholagogue).

Note that other species of Rhubarb (English, American and Indian) possess the same actions as the Turkish rhubarb, but are weaker in their effects.

Current Research Review:

- **Urology:**
  - **Chronic renal failure:**[1843]
    - Design: Randomized controlled clinical trial.
    - Patients: Chronic renal failure patients with elevated levels of urinary IL-6
    - Therapy: Rheum palmatum and captopril – experimental group; captopril – control group.
    - Results: Urinary IL-6 and serum creatinine levels reduced significantly in the study group. Authors concluded that Rheum palmatum improves renal function by inhibiting the production of IL-6 and lowering immune inflammation.
- **Gastroenterology:**
  - **Gastric and duodenal ulcer bleeding:**[1844]
    - Design: Controlled clinical trial.
    - Patients: 312 patients with duodenal and gastric ulcers with positive occult blood.
    - Therapy: Alcoholic extracts of Rheum officinale Baill, Rheum palmatum L, and Rheum tanguticum Maxim ex Balf tablets.

- Results: Occult blood changed from positive to negative for: 90.7% of patients over 57.1 hours in Rheum officinale Baill group, 93.7% of patients over 53.4 hours in Rheum palmatum L group, and 92.8% of patients over 56 hours in Rheum tanguticum Maxim ex Balf. Medical difference was found to be insignificant between the groups. The extracts were concluded to be efficient in curing the upper digestive tract bleeding.

Pharmacy:

Rhubarb powder:	0.5-5g/day
Decoction:	1 tsp./cup; 1 cup TID
1:5 tincture:	up to 6 ml/day; 40 ml/week max.

Contraindications: Brinker speculates that Rheum should be contraindicated in pregnancy, when nursing or with kidney stones. He further states that empirical evidence supports its contraindication with children, fever, inflammation, intestinal obstruction, abdominal pain, hemorrhoids or prolonged use.[1845]

Toxicity: Diarrhea with mild griping; icterus and hepatic enlargement; renal insufficiency and proteinuria. Treat by precipitating oxalates by giving calcium orally, ensure elimination, maintain hydration.

[1841] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*. Eclectic Medical Publications, Sandy, OR 1985 p.

[1842] Ellingwood, F. *American Materia Medica, Therapeutic and Pharmacognosy*. Ellingwood's Therapeutist, Chicago. 1919 p. 304

[1843] Song H, Wang Z, Zhang F. Investigation of urinary interleukin-6 level in chronic renal failure patients and the influence of Rheum palmatum in treating it. *Zhongguo Zhong Xi Yi Jie He Za Zhi* 2000;20(2):107-9

[1844] Zhou H, Jiao D. 312 cases of gastric and duodenal ulcer bleeding treated with 3 kinds of alcoholic extract of rhubarb tablets. *Zhong Xi Yi Jie He Za Zhi* 1990;10(3):150-1, 131-2.

[1845] Brinker, F. *Herb Contraindications and Drug Interactions*. Eclectic Medical Publications, Sandy, OR 1998. p. 115-6

Ricinus communis

Euphorbiaceae

Common name: Castor bean

Habitat: Native of India, cultivated world-wide

Botanical description: Castor oil plant can attain a height of 30-40 feet in tropical climates or may be a shrub 4-5 feet high in temperate climates. Alternate leaves are 6-8 inches across, palmate, toothed edges, and blue-green in color. The stem is purplish in color. The flowers are on a clustered, oblong, terminal spike. The fruit is blunt, green, smaller than 1 inch diameter and covered with prickles. Inside the fruit are small oval seeds.

Parts used: Seeds, leaves, young seedlings

Constituents: ricinoleic acid, fixed oils, ricin (toxalbumin), ricinine

Medicinal actions: Laxative, anti-inflammatory

Medicinal use: Ricinus has both internal and external application. Internally, Ricinus is used as a purgative agent. The seeds are highly toxic when taken internally and thus must be used with extreme caution. The toxic constituent, ricin, is not absorbed from the gastrointestinal tract which gives Ricinus a window of therapeutic action. The oil of Ricinus does not extract the ricin and therefore is safer to take internally. As a purgative, its effect dramatic and pronounced. The ricinoleic acid exerts the purgative effect. Four to five hours after ingestion, purgation will result. Castor oil produces sure purgation, but is not painful. Castor oil is indicated for sporadic use, but is not indicated in chronic cases of constipation because over time, its use will be irritating to the intestines. Castor oil is well indicated in the treatment of constipation, food poisoning or indigestion in children. If disguised in sweet juice or oil, castor oil will cause purgation and will also contribute to somnolence afterwards. Castor oil is often used as a purgative before and/or after vermifuges are given to aid in the expulsion of worms. Ricinus oil commonly produces nausea and this detrimental effect is mitigated by the use of Mentha piperita lozenges. Ricinus combines well with Rheum palmatum to produce sure purgation.

Externally, Ricinus is applied over an area of inflammation or injury. Its topical application reduces inflammation of the tissues in the area and speed healing time of injured tissue. Castor oil applied topically over the intestines will also promote purgation. Topical application is also safe because the main toxic ingredient, ricin in not extracted from the seeds into the commonly used oil.

Pharmacy: Internally: 1 TB. castor oil QD - BID
Externally: Apply Ricinus oil as needed over intact skin

Toxicity: Toxic dose is 2-4 seeds for adults. Fatal dose is 2-4 dose in children, 8 seeds in adults. *It should not be used with Dryopteris felix-mas as it increases the toxicity of the male fern.* Ricinine is considered one of the most toxic materials known.
Toxicity symptoms:

Immediately: burning of mouth and throat, thirst, vomiting, stomach pain, dull weak rapid pulse, uremia, diarrhea, colic.
2-5 days later: h/a, dizziness, dullness of vision, depression, liver and kidney damage, retinal, scleral or CNS hemorrhage, trembling, weakness, convulsions
Death up to 12 days after ingestion.
Treat with emesis or gastric lavage, activated charcoal, vit. C, alkalinize blood.

Rosmarinus officinalis

Lamiaceae

Common name: Rosemary

Habitat:

Botanical description: Woody stem, which bears linear leaves about 1.5-3.5 cm long, green above and whitish beneath, with strongly resolute margins. Flowers are bluish and two-lipped with two stamens only.

Parts used: herba

Constituents [1846]

- Volatile oil (1.0-2.5%): chief components 1,8-cineole (20-50%), alpha-pinene (15-25%), camphor (10-25%), further including among others camphene, borneol, isobutyl acetate, beta-caryophyllene, p-cymene, limonene, linalool, myrcene, alpha-terpineol, verbenol
- Diterpenes (bitter): including, among others, carnosolic acid (picrosalvin), isorosmanol, rosmadial, rosmaridiphenol, rosmariquinone
- Caffeic acid derivatives: chief components rosmarinic acid
- Flavonoids: including, among others, cirsimarin, diosmin, hesperidin, homoplantiginin, phegopolin
- Triterpenes: chief components are oleanolic acid (10%), ursolic acid (5%)

Pharmacology

A number of constituents have shown activity *in vitro*. The volatile oil, including eucalyptol (cineole), is considered to have potent antibacterial effects and to relax smooth muscles in the lungs. [1847] Animal tests have demonstrated spasmolytic effects on the gallbladder ducts and on the upper intestine as well as a positive inotropic effect and an increase in coronary blood flow. Oil of rosemary improves circulation when applied externally, due to a certain skin irritant. [1848] Rosmarinic acid has antioxidant activity and another ingredient of rosemary, known as carnosol, inhibits cancer formation in animal studies. Inhalation and oral doses of Rosemary oil can increase locomotor activity in mice. [1849] No human studies confirm rosemary's use for these conditions.

Medicinal actions: Anti-inflammatory, tonic astringent, diaphoretic, stomachic, capillary stabilizer

Traditional Medicinal Use:

Both King and Cook described the leaves are diffusively stimulating and relaxing in action; and when used as a warm infusion prove slightly diaphoretic and nervine, and somewhat emmenagogue. The leaves considered useful in recent colds, recent suppression of the menses from exposure, and as an antispasmodic in mild hysteria, painful menstruation, and other difficulties.

- Topical Applications: The oil is a good nervine stimulant for external uses, as in neuralgia and other acute pains; and enters into compounds named under camphor and spearmint.

Current Medicinal Use: Rosmarinus relaxes smooth muscle spasm and the smooth muscles of capillaries and arteries, thus enhancing blood flow. Rosmarinus has a tonifying effect on the circulation and on the nervous system.

- Behavioral and Psychological Conditions: EEG activity, alertness, and mood were assessed in 40 adults given 3 minutes of aromatherapy using two aromas, lavender (considered a relaxing odor) or rosemary (considered a stimulating odor). Participants were also given simple math computations before and after the therapy. The lavender group showed increased beta power, suggesting increased drowsiness, they had less depressed mood and reported feeling more relaxed and performed the math computations faster and more accurately following aromatherapy. The rosemary group, on the other hand, showed decreased frontal alpha and beta power, suggesting increased alertness. They also had lower state anxiety scores, reported feeling more relaxed and alert and they were only faster, not more accurate, at completing the math computations after the aromatherapy session. [1850]
- Cardiovascular Conditions: Rosmarinus may have a tropism to the cerebral vessels, and is used to increase circulation to the head and to improve mental clarity, improve memory, and improve vision. Also, diosmin decreases capillary fragility. Additionally, it increases coronary blood flow and exerts a positive inotropic action in the myocardium. Rosmarinus oil may be applied topically for these purposes as well as the tea or tincture taken internally. This makes Rosemary effective in chronic circulatory weakness including hypotension.
- Endocrine Conditions: Brinker states that Rosmarinus has a hyperglycemic effect although no other information is provided. [1851]
- Gastrointestinal Conditions: Rosemary is an excellent tonic for the elderly as it will stimulate the appetite and tonify the circulatory and nervous systems. The essential oils exert a carminative effect, and thus this herb may relieve flatulence, distention. Rosemary is spasmolytic on the bile duct and small intestine. At the same time, the bitterness of the plant lend it digestive strengthening and appetite stimulating effects.

- Inflammatory Conditions: Rosemary is anti-inflammatory, most likely due to the rosmarinic acid, ursolic acid and apigenin.
- Topical Applications: Rosemary baths are a tonifying, stimulating option for persons who are run-down, hypotensive and pale. A rosmaricine derivative has stimulating and mild analgesic activity. Rosemary may be applied externally over a painful area such as arthritic joints and neuralgic areas in order to reduce the pain and inflammation.

Pharmacy: Alcohol extractions are the ideal preparation of Rosmarinus since the alcohol will extract the volatile oils well. Rosemary wine has historically been used in place of tincture.
1:5 Tincture: 4 ml TID; 80 ml weekly
Tea: 1 tsp. dried herba/cup; 1 cup TID [1 tsp. = 2 g]
External applications: baths, ointments

Drug Interactions: No information is currently available from the selected resources.

Contraindications: Brinker contraindicates the use of Rosmarinus during pregnancy due to empirical emmenagogue and abortifacient effects and toxic side effects of the essential oil. [1852]

Toxicity: No information is currently available from the selected resources.

[1846] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001
[1847] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001
[1848] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001
[1849] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 30.
[1850] Diego, MA, Aromatherapy positively affects mood, EEG patterns of alertness and math computations.
Int J Neurosci. 1998 Dec;96(3-4):217-24.
[1851] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 166
[1852] Brinker, p. 117

Rubus ideas

Rosaceae

Common name: Raspberry; other species include R. villosus (blackberry), R. canadensis (creeping blackberry), R. trivialis (low-bush blackberry or Southern dewberry), R. chamaemorus (cloudberry) and R. odoratus (mullberry)

Habitat: Grows in dense clusters with upright stems, which are covered with bristles and thorns.

Botanical Description: The young stems are smooth and dotted. The leaves are compounds of 3-5 oblong-ovate, pointed, and cut-serrated leaflets, which are light green above and downy whitish-gray beneath, 1-2 in. long. The flowers are white with 5 petals and ripening into a red, hemispherical fruit.

Part Used: Leaves and fruit, root bark of R. villosus and R. canadensis

Constituents: Leaves: Tannins, v. oil, citric acid, malic acid, polypeptides, flavonoid glycosides, Ca, Mg, Fe, niacin, Se
Fruit: Vits. A, C, K, Ca, Mg

Medicinal actions: Astringent, uterine tonic, facilitates parturition

Medicinal use:

- Gynecologic Conditions: The plant exerts paradoxical actions of uterine relaxation and tonification. The relaxation may be due to the restoration of proper Ca and Mg concentrations and possibly due to the actions of the polypeptides (mechanism unknown; perhaps incorporated into prostaglandin synthesis). Through its astringent effect, Rubus tonifies the smooth muscle layer of the uterus such that there is increased contractility, regularity of contractions and decreased spasm. Thus, Rubus prepares the uterus for childbirth, but should not be used before 16 weeks of gestation because the relaxing effect may too strong and threaten the pregnancy. Finally, Rubus ideas can reduce post-partum hemorrhage, heavy menses, and after pains of labor. According to Culpepper, raspberry is of a cooling nature.
- Gastrointestinal Conditions: The astringent effect is notable in the GI tract as well. Raspberry is useful in mouth and throat inflammation. The tannins bind to exposed proteins on inflamed tissues, form insoluble complexes which, in turn, make the proteins resistant to proteolytic enzymes (thus reducing continued cell destruction with resultant inflammation). Additionally, the binding of tannins to tissue proteins reduces viscous mucous production, creating an astringent effect, and simultaneously exerts a tonifying effect on these tissues. Rubus (esp. R. villosus [blackberry]) is anti-inflammatory and tonifying in cases of diarrhea.

According to Mills and Bone:[1853]

- Gynecologic Conditions: Rubus can be used in the short-term treatment of dysmenorrhea to relieve uterine spasm. Rubus is also indicated in endometriosis demonstrating its use in chronic pelvic pain. In regard to partus preparation, Rubus is indicated after the first trimester and likely builds up the strength of the myometrium.

According to King's:[1854]

Specific indications for R. villosus include gastrointestinal atony with copious, watery and pale alvine discharges.

- Gastrointestinal Conditions: An infusion of the leaves of R. idaeus or a decoction of the roots of R. villosus or R. canadensis is an excellent astringent remedy in *diarrhea, chronic dysentery, cholera infantum, relaxed conditions of the intestines of children, passive hemorrhage from the stomach, bowels and colliquative diarrhea.* The fruit, particularly of R. villosus, makes an excellent syrup, which is of much service in *dysentery*, relieving tenesmus and affecting cure. The jelly or jam may likewise be used in similar cases. The fruit of R. idaeus, when eaten freely, promotes the action of the bowels. Rubus villosus is especially adapted to *children's diarrheas,* the stools being copious, watery and clay-colored. Such children are pale, fretful, without appetite, there is deficient glandular activity and the gastrointestinal tract shows evidence of enfeeblement and relaxation.

  The decoction of the leaves of R. idaeus will allay nausea and vomiting. Combined with aromatic, the decoction is useful in *diarrhea, cholera morbus* and *cholera infantum*.
- Gynecologic Conditions: The preparation as described above is beneficial for *passive hemorrhage of the uterus*. The decoction, used as an injection, is useful in *gonorrhea, gleet (mucous discharge from the urethra in chronic gonorrhea), leukorrhea and prolapse of the uterus or anus.*

  During *labor*, Rubus idaeus will increase the activity of the uterine contractions when these are feeble, and is useful in *after-pains*.
- Inflammatory Conditions: Raspberry syrup, when added to water, forms a refreshing and beneficial beverage for *fever patients* and during convalescence.
- Genitourinary Conditions: R. odoratus is used freely in *affections of the urinary organs and dropsy.* R. Chamaemorus is successfully employed in *cystic debility and dropsy.*

According to Cook:[1855]

Rubus idaeus

- Gastrointestinal Conditions: The leaves of the red raspberry are mildly astringent and of a peculiarly soothing nature, being very acceptable to the stomach, always leaving a slight tonic impression, often allaying nausea and vomiting. The infusion is a milk astringent tonic in sub-acute dysentery and diarrhea, lessening the discharges without abruptly checking them, and soothing instead of exciting the bowels. It may be used as an injection for dysentery.
- Nervous Conditions: It is soothing and sustaining to the nervous system.
- Genitourinary Conditions: It exerts a moderate impression the kidneys and may be used for mild catarrh of the bladder.
- Gynecologic Conditions: It exerts an influence on the uterus sustaining it in flagging labor. For this purpose it has been made as an infusion with Cypripedium and a minute portion of Capsicum. It also anticipates flooding and relieves after-pains.
  It may be used as an injection in leukorrhea and mild gonorrhea.
- Ophthalmologic Conditions: As a wash, it is excellent in recent opthalmia, especially in infants.

Rubus villosus

- The roots are strongly astringent, drying but not stimulating and exert some tonic action. They are used in chronic dysentery and diarrhea and in sub-acute forms with decided relaxation; as an injection in prolapsus and leukorrhea with laxity, prolapsus ani, bleeding pile and colliquative diarrhea; and as a wash to apthous sores, bleeding gums and other hemorrhages. Combined with Pimento or similar aromatics, they are good in passive uterine hemorrhage and excessive menstruation.
- The fruit is kind for weak and irritable stomachs and may be used freely to the greatest advantage in diarrhea and bilious laxity of the bowels in summer. It alone is often the only corrector of the bowels needed; though when the stomach is quite sensitive, it should be crushed and strained to remove the seeds. It is frequently made into blackberry cordial, for which there are many formulas.

Pharmacy: Powdered root bark, 20-30 grains several times a day

Infusion:

2 tsp. herb / 1 cup water; sig 1-2 cups TID [1 tsp. = 0.6 g] (Alschuler)

1 oz to a pint of boiling water, strained with pressure, sig 1-2 oz. at suitable intervals (Cook)

Decoction:

1-4 oz of decoction taken several times a day

In *prolapsed uterus*, it may be used either alone or combined with the internal use of a decoction of equal parts of black cohosh and blackberry roots, taken freely. (King's)

Rubus villosus: 1 oz root decocted for 2 hours in a pint of hot water, sig 1 oz q 2-3 hours (Cook)

Fluid extract

1:1 25% EtOH; sig 5 ml TID (Alschuler)

during labor: 5ml doses, up to 6 x qd (Mills and Bone)

Eyewash

Vinegar or wine

Blackberry Cordial: Take any desired quantity of berries and set them on a moderate fire until they begin to break then mash them well and strain with pressure. To each pint of juice put two drams each of Zingiber, Cinnamomum and Allspice and one dram each of Mace, and cloves all well crushed and tied in a thin piece of muslin and immersed in the juice for an hour. Keep at a moderate heat with the vessel closely covered. Remove the spices, press them well, and to each pint of the juice add a pound of white sugar and dissolve. When cold add four ounces of brandy to each quart of the syrup and keep in close bottles. Sig 1 T 4-6 x day. (Cook) (Note: given the current insight as to the effects of sugar on the system a smaller amount or appropriate substitution may be recommended.)

Contraindications: The use of Rubus in pregnancy has been proven in many cases and there is no evidence for any deleterious effect.[1856]

Brinker, on the other hand, suggests contraindication in pregnancy with a history of precipitate labor due to its uterine stimulant activity as well as it having antigonadotropic activity (empirical based on in vitro studies). He further states that it has uterine stimulant and hormonal effects as well.[1857]

Adapted from Brinker: [1858]

Both R. idaeus and R. villosus have a tannin content of 10-15%. When extracted in hot water, tannins can precipitate alkaloids from plants, alkaloidal drugs, proteins, salicylates, iodine and iodides and metals thereby slowing, reducing or blocking their absorption. The drug-tannin reaction can interfere with dosing if sources of the two compounds are combined in solution prior to administration.

Drug-tannin precipitates are maintained in an alkaline pH and dissolve in an acid environment such as the stomach. Unless the solution is shaken well, precipitates will settle in the bottom leading to low or no amounts in initial doses and high or toxic amounts when the last doses from the bottle are taken. The precipitates are generally soluble in mixtures containing over 15-40% alcohol. Tannins will not precipitate low concentrations of alkaloidal salts in the presence of many of the gums.

Toxicity: none found with review of the current literature

[1853] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 241, 244, 246

[1854] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983, p. 1682

[1855] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy... Eclectic Medical Publications, Sandy, OR 1985 p. 667-8

[1856] Mills and Bone p246

[1857] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 115

[1858] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 157-8

Rumex crispus — Polygonaceae

Common name: Yellow dock (In this monograph Rumex refers to R. crispus. However, R acetosa is another Rumex species having different medicinal qualities.)

Habitat: Rumex grows in waste places, roadside ditches, and sidewalk cracks(!).

Botanical description: A perennial herb with a yellow tap root that grows between 8 and 12 inches and an annual stem of 2-3 feet. The leaves are lanceolate, slender and have a crisp, wavey margin. Pale green drooping flowers are interspersed with the leaves.

Parts used: radix (harvest in late fall). According to King, the fresh root was much more active than the dried root.

Historical uses: Rumex was popular among many Native American tribes. It was used externally as poultice to treat boils and other conditions in which the pus needed to be drawn out. It was also used internally as laxative and mild astringent tonic and for the treatment of many and diverse conditions in which toxicity played a part.

Constituents:

- Anthraquinone glycosides
- Oxalates: oxalic acid, calcium oxalate
- Tannins (3-6%) (other Rumex species are generally more astringent)
- Flavonoids: including, among others, quercitrin
- Anthracene derivatives (0.9-2.5%): aglycones physcion, chryosphanol, emodin, aloe-emodin, rhein, their glucosides
- Naphthalene derivatives: neopodin 8-glucoside, lapodin
- Iron and other minerals

Pharmacology:

The anthraquinone glycosides are absorbed in the jejunum and are hydrolyzed during absorption. They are then resecreted back into the bowel where they irritate, and hence, stimulate the intestines to undergo peristalsis. Yellow dock contains relatively small amounts of anthraquinone glycosides, compared with other botanicals with these constituents.[1859]

Medicinal actions: Alterative/Depurative, Aperient, Astringent, Cholagogue

Traditional Medicinal Use:

Cook described Rumex as a slowly relaxing and stimulating alterative which has a mild astringency that leaves behind a mild tonic impression. It works in the classic sense of an alterative by removing waste material, supporting tissue restoration.[1860] The alteratives are indicated when there is ulceration of the mucous membranes or disease of the skin results from impure blood. A chief use made of it was in scrofulous conditions, particularly of the skin and GI tract.[1861] Mucous membranes that lack tone responds well to Rumex, particularly when combined with an astringent. Rumex was reported by Ellingwood to be effective in prevention of metastasis and used hypodermically for the treatment of some mild, early cases of cancer.

Specific Indications and Uses:

Bad blood with chronic skin diseases; bubonic swellings; low deposits in glands and cellular tissues, and tendency to indolent ulcers; feeble recuperative power; irritative, dry laryngo-tracheal cough; stubborn, dry, summer cough; chronic sore throat, with glandular enlargements and hypersecretion; nervous dyspepsia, with epigastric fullness and pain extending through left half of chest; cough with dyspnoea and sense of precordial fullness;[1862] exhaustive morning diarrhea between 6am and 12 am.[1863]

- Dermatological Conditions: King found Rumex useful in large variety cutaneous conditions, particularly those cases secondary to metabolic impurities in the blood. By acting on the glandular system Rumex was used to influence conditions where a tendency to indolent ulcerations and inflammatory deposits occur.[1864] In nearly all forms of dry, scaly, and pustular skin diseases it was reputed both as an inward and outward remedy.[1865]
- Gastrointestinal Conditions: Rumex was used in nervous dyspepsia with epigastric fullness and pain, and aching or darting pain in the left chest, with flatulent distension of the stomach and gas. Though not a cathartic, it was used as a mild laxative, which exerted a desirable tonic influence on the GI tract. Conversely, Rumex was also used to check painless watery diarrheal discharges as it seems to give solidity and tone to the assimilative function.
- PulmonaryConditions: Rumex was employed for "cough with a sensation of fullness in the chest, with sighing, yawning, and efforts to take a full inspiration."[1866] It is most valuable in respiratory affections due to devitalized blood, catarrh, and in chronic sore throat with hypersecretion. Dry and stubborn coughs also responded well to Rumex.

- Topical Applications: The fresh root was used in a diversity of forms for scrofulous conditions, itch, and a discutient for indolent glandular tumors. (According to Stedman's, a discutient is a dispersing agent for pathological, including cancerous, accumulations.)

Current Medicinal Use:

Rumex is most indicated in chronic toxic conditions with debilitation, tendency to tissue stagnation (lymphadenopathy, ulcers, glandular enlargement), feeble recuperative power, chronic sore throat, irritated dry cough, digestive atony (with bloating, gas, epigastric fullness). Rumex is especially indicated in chronic skin conditions with G.I. complaints, debilitated toxic conditions such as cancer, and rheumatic or inflammatory joint disease. Rumex is high in minerals, especially iron. In addition, Rumex enhances the absorption of minerals (again, primarily iron).

- Dermatological Conditions: Skin that is dry, scaly and crusty responds well to Rumex. Rumex increases the elimination of toxins from the skin. Rumex is often included in detox formulas and spring tonics as it helps to flush toxins through the skin, lymphatic system, liver/GB, and intestines. [Taraxacum: Rumex: Arctium or as a spring tonic- Arctium: Rumex: Smilax: Echinacea]
- Gastrointestinal Conditions: The anthraquinone glycosides in Rumex lend the plant its mild laxative (aperient) action. Rumex is therefore well indicated in mild constipation and/or diarrhea due atonicity. The tannins in Rumex give it astringent action on the gastrointestinal tract and in that way, Rumex is a gentle intestinal tonic.
- Hepatobiliary Conditions: Rumex is a cholagogue in that it flushes bile through the liver and gall bladder. Rumex relaxes the bile duct while stimulating the release of bile from the gallbladder. This makes Rumex very useful in conditions of cholelithiasis that consists of gravel. This property also enhances fat absorption through better esterification. Rumex combines well with other choleretics and cholagogues for the treatment liver congestion. Given the stimulating actions on both the liver and the intestinal tract, it naturally follows that Rumex has great value as an alterative.
- Topical Applications: Rumex may be used externally as a wash to enhance granulation tissue and thus wound healing. Rumex tonifies epithelial tissue and is a useful external application for hemorrhoids.

Current Research Review:

- Search of Medline revealed no clinical trials as of October 2002.

Pharmacy:

Dosage is important as large doses tend to aggravate the skin condition and also deposit more oxalates in tissues. Doses less than 25 ml/week are sufficient and effective.

Decoction: 2-6 gm/ 8 oz. water; sig 1-2 cups TID
Tincture: 1:5 25% EtOH; sig 25 ml/week
Syrup: 1/2# gently boil crushed root in 1 pint syrup x 1 hr.; sig 1 tsp. TID
Ointments, creams

Contraindications: Contraindicated in irritable bowel, spastic colon, pregnancy. Brinker cautions against use in patients with renal disease due to the oxalate content.[1867] The use of tannins is contraindicated or inappropriate in cases of constipation, iron deficiency and malnutrition.[1868] Tannin rich herbs may reduce the absorption of alkaloids and other basic drugs through precipitation.[1869]

Toxicity: No cases of toxicity have been reported.

[1859] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs Prima Publishing, Rocklin, CA. 2001.

[1860] Ellingwood p 378

[1861] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy*. Eclectic Medical Publications, Sandy, OR 1985 p.

[1862] Felter HW, Lloyd JU. *King's American Dispensatory,* 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[1863] Ellingwood, F. *American Materia Medica, Therapeutic and Pharmacognosy*. Ellingwood's Therapeutist, Chicago. 1919 p. 378

[1864] Felter

[1865] Cook

[1866] Felter

[1867] Brinker, F. *Herb Contraindications and Drug Interactions*. Eclectic Medical Publications, Sandy, OR 1998. p. 150

[1868] Mills and Bone, p 170

[1869] Brinker, F. *Herb Contraindications and Drug Interactions.* Eclectic Medical Publications, Sandy, OR 1998. p. 159

Ruscus aculeatus

Liliaceae

Common name: butcher's broom

Habitat:

Botanical description:

Part used: root

Historical use:

Energetics:

Constituents:

- Steroid saponins (4-6%): ruscogenin, ruscine, ruscoside, aglycones neoruscogenin
- Benzofuranes: euparone, ruscodibenzofurane

Pharmacology: Ruscogenins and neoruscogenins contain the basic steroid structure found in adrenocortical hormones and are responsible for the medicinal actions of Ruscus. Similar to diosgenins, found in Dioscorea, ruscogenins decrease vascular permeability.[1870]

Medicinal Actions: antiinflammatory, vasoconstrictor, antihemorrhagic

Traditional Medicinal Uses: No information is currently available from the selected resources.

Current Medical Uses:

- Cardiovascular Conditions: Although ruscogenins do not have cortisone-type actions, they do decrease vascular permeability to inflammation and cause vasoconstriction, reducing hemorrhage. The effect is partially on the venous system, thus Ruscus is considered to be a specific tonic for the veins[1871] and Ruscus is indicated in 2° lymphedema.[1872] Ruscogenins have proved particularly effective in the treatment of anorectal syndrome, varicose veins and hemorrhoids. Clinical studies have confirmed the benefit of a combination of vitamin C, flavonoids, and Ruscus for treatment of chronic venous insufficiency.[1873,1874]
- Endocrine Conditions: An extract of Ruscus combined with flavonoid derivatives has been shown to benefit patients with diabetes, by lowering cholesterol levels and improving glucose tolerance.[1875]

Pharmacy:

Commercial products: Ruscorectal ointment and suppositories (Endopharm)[1876] 16.5-33 mg ruscogenins tid

Drug Interactions: No information is currently available from the selected resources.

Contraindications: No information is currently available from the selected resources.

Toxicity: No information is currently available from the selected resources.

[1870] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[1871] Weiss, R.F. Herbal Medicine. Verlag GmbH, Stuttgart, 1996.

[1872] Murray, M., Pizzorno, J. The Textbook of Natural Medicine, 2nd ed. Churchill Livingstone. 1999

[1873] Capelli R, Nicora M, Di Perri T. Use of extract of *Ruscus aculeatus* in venous disease in the lower limbs. *Drugs Exp Clin Res* 1988;14:277–83.

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[1876]

Salix spp. Salicaceae (Willow Family)

Updated Fall 2002

Common name: White Willow (S. alba), Black Willow or American Willow (S. nigra), European willow.

Habitat: Indigenous to central & southern Europe, Asia, & parts of North America.

Botanical description: A dioecious tree bearing oblong to lanceolate leaves w/ finely serrated margins. The tree bears flowers in erect catkins. Male catkins have protruding yellow stamens, & the female catkins have green stamens. The bark is 1-2 mm thick w/ a glossy, greenish yellow or brownish grey outer surface that has faint longitudinal striations. The inner bark is pale yellow to white & is either smooth or has fine longitudinal striations.

Parts used: Bark.

Constituents:[1877]

- Glycosides & esters yielding salicylic acid (1.5-12%): salicin (0.1-2%), salicortin (0.01-11%) & salicin derivatives which are acylated to a glucose residue.
- Tannins (8-20%).
- Flavonoids.

Pharmacology:

Glycosides & esters are converted into salicin upon entering the stomach or small intestine. When salicin reaches the distal ileum or colon, gut flora digest salicin into salicyl alcohol & glucose. Salicyl alcohol (Saligenin) is then absorbed into the bloodstream & finally converted into its active form, salicylic acid, via oxidation w/in the blood & liver. More than 86% of salicyl alcohol is absorbed from the gut, which creates a constant plasma level of salicylic acid for several hours.[1878] Metabolites are secreted in the urine. Since salicylic acid is also secreted via the kidneys, it can be used as an analgesic to the urethra & bladder.

Salicylic acid is an analgesic & antiplatelet agent.[1879] The analgesic actions of willow are typically slow-acting but last longer than standard aspirin products. [1880] Salicylic acid also has antipyretic, anti-inflammatory & antiseptic qualities as well, & has been shown to inhibit cyclooxygenase.[1881]

Modern day aspirin is derived from the bark, & is often used to reduce pain & inflammation associated with rheumatoid arthritis. In 1838, salicylic acid was first prepared in pure form from willow bark. In 1860, salicylic acid was synthesized. Then acetylsalicylic acid was synthesized & aspirin was born.[1882]

Aspirin & related anti-inflammatory drugs are notorious for irritating or damaging the stomach. However, when taken in standard doses, willow does not appear to produce this same side effect.[1883] This may be partly d/t the fact that most of the salicylic acid in willow is present in chemical forms that are only converted into salicylic acid after absorption from the gut. [1884] Evidence suggests that standard doses of Willow bark are the equivalent of 1 baby aspirin per day, rather than a full dose.[1885] It appears that other ingredients may also play a role, such as tremulacin. [1886]

Medicinal actions: Analgesic, Anti-inflammatory, Febrifuge, Tonic, Astringent.

Current & Traditional Medicinal Use:

- **Historical Use:** Willow has been used to lessen hemorrhage & chronic mucous discharge, d/t its tonic & astringent principles. It has also been used to astringe the tissues & calm the spirit of sexual excess.
- **Gastrointestinal Conditions:** S. alba was used to treat chronic diarrhea, atonic forms of dyspepsia w/ characterized by loose stools, & scrofulous maladies w/ curdy diarrhea. Other conditions associated w/ debility of the digestive organs also called for Salix.
- **Gynecological Conditions:** Salix was used to treat atonic menorrhagia & for leucorrhea.
- **Reproductive Conditions:** Specific indications for S. alba includes: "Sexual irritability w/ lascivious dreams, … extreme sexual excitability w/ uncontrollable desire, erotomania, nymphomania, … prostatitis, w/ cystic irritation, … ovaritis, orchitis …"[1887] Physicians relied on Salix to quell extreme sexual behavior, when this behavior resulted from irritability of the pelvic organs (rather than from mental & emotional causes). Salix was considered to be a potent way to reduce sexual functioning, however, it was also considered to be tonic to reproductive organs. Tonification was most pronounced when there was inflammation of pelvic organs following overuse.
- **Topical Applications:** Externally, Salix was considered a good application for bleeding surfaces, indolent scrofulous ulcers, & cold sores
- **Inflammatory Conditions:** Salix spp. is used in a variety of conditions with symptoms of fever & pain. Mild flus & colds with fever, mild headaches & other pain caused by inflammation are indications for this plant. The inhibition of cyclooxygenase accounts for the anti-inflammatory, anti-pyretic, & analgesic effects. Salix spp. has been used for various forms of arthritis for

centuries. Due to the analgesic actions of salicylic acid Salix may be used as one would use aspirin, but with less concern about possible GI irritation.

Current Research Review:

- **Low Back Pain:**
  - Willow bark extract was found to be an effective treatment for low back pain in the dose, delivering 240 mg of salicin (39% of patients became pain-free) or 120 mg of salicin (21% of patients became pain-free) x 4 weeks. This was a randomized placebo-controlled, double-blind study, involving 210 patients. The response in 240 mg group was seen after only a week of treatment. One patient suffered a severe allergic reaction, possibly due to extract.[1888]
  - A larger, open non-randomised, study, involved 451 patients. Assalix (proprietary extract of willow bark) was given in the dose delivering 120 mg of salicin (19% of patients became pain-free) or 240 mg salicin (40% of patients became pain-free) qd x 4 weeks. Control group of 224 patients received orthopedic care (18% of patients became pain-free, also exacerbations had been shorter, but the pain was more intense). The authors suggested that more regular full dosing with NSAIDs by orthopedists may be more effective and less expensive treatment overall, but the possibility of more side effects.[1889]
  - Assalix, in the dose delivering 240 mg salicin qd x 4 weeks, was found as effective as COX-2 inhibitor rofecoxib in the dose of 12.5 mg in relieving the symptoms of low back pain. This was an open randomized trial involving 228 patients. Treatment with Assalix was found to be less expensive; the incidence of adverse events was similar in the two groups.[1890]
- **Osteoarthritis:**
  - Willow bark extract showed a moderate analgesic effect in a dose corresponding to 240 mg salicin qd x 4 weeks. This was a double-blind, randomized placebo-controlled trial, involving 78 patients.[1891]
  - One double-blind trial found that a product featuring Willow (with Black cohosh, Guaiac, Sarsaparilla, & Aspen bark) effectively reduced the pain of osteoarthritis compared to placebo. Another trial found that 1,360 mg of Willow bark extract per day (delivering 240 mg of salicin) was somewhat effective in treating pain associated with knee &/or hip OA.[1892]

Pharmacy:

- Standardized extract, delivering 120-240 mg salicin qd, as reported in the current literature above
- 1 teaspoon = 1.5 g herb. [1893]

Contraindications/Toxicitiy/Side effects:

Salix spp have a tannin content of 8-20%, which can lead to precipitation of some substances (see Brinker or J. nigra monograph for more specific information.) Side-effects are not expected when using the whole plant. Persons with known hypersensitivity to salicylates may experience a reaction (urticaria, rhinitis, asthma, bronchial spasms). This reaction is rare, however, given the form of the salicylate in the whole plant (sodium salicylate).[1894]

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[1893] *PDR for Herbal Medicines*. 1112.
[1894] Wichtl, M, *Ibid*, 438.

Sambuccus nigra/S. canadensis — Caprifoliaceae

Common name: Black elderberry (S. nigra), American elderberry (S. canadensis)

Habitat: The small tree prefers sunny locations on the edge of other trees in a moist environment.

Botanical description: Shrubs or small trees, leaves compound with a terminal leaflet, deciduous. Flowers are small, white, in a showy terminal cluster. Fruit is fleshy, berry-like containing several bony nutlets.

Parts used: Leaves (toxic), root (toxic), bark, FLOWERS, berries

Constituents:

Fruit: Minerals, vitamins, sambucin, anthocyanosides, pectin
Leaves: rutin, minerals, vitamins
Flowers: minerals, vitamins, essential oil, rutin, quercetin, mucilage, tannin
Bark: baldrianic acid.

Pharmacology

Animal studies have shown the flowers to have anti-inflammatory properties.[1895] Flavonoids, including quercetin, are believed to account for the therapeutic actions of the elderberry flowers and berries.[1896] The lectins in Sambuccus are used in laboratories to detect b-Galactose Sialic acid. The exact mechanism for the antiviral effects has not been elucidated.

Medicinal actions:

Flowers: mild diaphoretic, mild laxative, diuretic, alterative, demulcent, antirheumatic, antispasmodic, anticatarrhal, carminative, emetic.

Berries: anti-rheumatic, emunctory stimulant (all excretory organs or ducts), anti-neuralgic, antiscorbutic, alterative, carminative, emetic.

Leaves, Root, Bark: anti-inflammatory, vulnerary, diuretic, diaphoretic, purgative, poisonous.

Traditional Medicinal Use:

Specific Indications and Uses.—In skin affections, when the tissues are full, flabby, and edematous; epidermis separates and discharge of serum is abundant, forming crusts; indolent ulcers, with soft, edematous borders; mucous patches, with free secretions; post-scarlatina dropsy; low deposits in, or depravation of tissues.[1897]

Cook described the infusion of the flowers as diffusely relaxant and mildly diaphoretic, gently nervine, and as a soothing diuretic.[1898]

- Gastrointestinal Conditions: The expressed juice of the berries, evaporated to the consistence of a syrup, was a valuable aperient and alterative in small doses. The flowers and expressed juice of the berries have been beneficially employed in scrofula, cutaneous diseases, syphilis, rheumatism, etc. According to King, the fresh inner green bark was observed to be cathartic with large doses producing emesis and small doses used as an efficient deobstruent (removal of obstructions), promoting all the fluid secretions, and was much used in dropsy (edema), especially that febrile and exanthematous diseases, as well as in many chronic diseases. However, Cook suggested using only the dried inner bark as a relaxing and stimulating alterant although it was seldom employed. The berries are sweetish, and by many were used as food and as a mild laxative and secernent.
- Infectious Conditions: The flowers were considered useful in measles, recent colds, and in erysipelas.
- Topical Applications: Externally, Sambuccus is a valuable agent, especially for eruptions which appear as full, flabby, and edematous and particularly when attended with abundant discharge of serum. Made into a cream, Sambuccus was considered an excellent discutient ointment of much value in burns, scalds, and some cutaneous diseases, such as eczema, old ulcers, with soft, edematous edges and free secretion of serum, and in mucous patches, with free discharges.

Current Medicinal use:

Sambuccus flowers are excellent diaphoretics if taken as a hot tea. They combine well with other herbs for this purpose. In this regard, Sambuccus flowers are excellent remedies for the treatment of colds, other acute infections with fever and hot dry skin, headache and nausea. Rhinitis, sun sickness, asthma, croup, hay fever, conjunctivitis, rheumatism, pharyngitis, tonsillitis, and stomatitis each respond well to Sambuccus, particularly in combination with Tillia.

Elderberry, as well as small amounts of Echinacea and bee propolis, is widely used as a cold and flu remedy. Some evidence suggests that this mixture may stimulate the immune system and inhibit viral growth.[1899] In a preliminary double-blind study, the combination therapy significantly reduced the recovery time from epidemic influenza.[1900] Elderberry is also being studied for potential activity against other viruses, including and herpes[1901] and HIV[1902]

If the flowers are taken as a cool tea, it will more likely act as a diuretic. The alterative actions of the flowers are nourishing and slow-acting. Over time, the liver will be gently tonified. The mucilage in the flowers creates a demulcent action.

Sambuccus berries are anti-rheumatic, emunctory (excretory duct) stimulant, anti-neuralgic, antiscorbutic, alterative, carminative and emetic. Dried, cooked berries are not emetic. The anthocyanidins in the berries account for the anti-rheumatic by cross-linking collagen fibers, acting as antioxidants, preventing enzymatic cleavage of collagen during inflammation, preventing release and synthesis of compounds causing inflammation (i.e. histamine, prostaglandins, leukotrienes), and promoting mucopolysaccharide and collagen biosynthesis. Thus, the berries are useful for joint diseases, allergic conditions (i.e. sinusitis, asthma), colds and coughs, diarrhea, and rheumatism. The high content of vit. C in Sambuccus berries potentiates these effects on collagen and mast cells.

Sambuccus leaves, root, and bark are safer if cooked since cooking destroys the toxin, di-sambunigrin, but the internal use of these plant parts is still unsafe. These parts of the plant are best indicated externally for hemorrhoids and labial tears, bites, wounds, stings, sunburn, boils, abscesses, sore joints, bruises, sprains, ulcerations (esp. with water discharge), and as a drawing salve for boils, splinters, and weeping eczema. They are vulnerary and astringent.

- Gastrointestinal Conditions: Sambuccus flowers are also an excellent remedy for colic in babies.
- Pulmonary Conditions: Sambuccus is useful in someone who has a lot of phlegm that needs to be softened and expectorated. Also, Sambuccus will work well in someone who has a dry, irritated cough without congestion. Sambuccus flowers are anti-spasmodic and are therefore useful in someone who has asthma, or to decrease their cough in order that they may sleep. Sambuccus flowers have anti-catarrhal action, with the locus of action especially pronounced in the sinuses. Sambuccus contains tannin which astringes the mucosa of the sinuses, thus relieving congestion. Sambuccus will also cause constriction of the blood vessels supplying the sinuses and therefore should be used with caution long-term.

Current Research Review:

- Search of Medline revealed no human trials related to specific conditions as of October 2002.

Pharmacy: Flowers: Hot tea (diaphoretic, laxative) 2-4 TB/cup water; 1 cup TID
Cold tea (diuretic and alterative) 2-4 TB/cup water; 1 cup TID
Berries: Syrup
Cordial
Dried berry decoction 1-2 tsp/cup water; ½ cup TID
Juice: Cover fresh berries with water and boil for 3 minutes then express the juice. Add 1 part honey to 10 parts juice and boil in order to preserve the juice. Drink 1 glass with hot water BID
Leaves, Bark, Root: Poultice, Salve, Compress, Fomentation, 2-3 TB/sitz bath

Toxicity: Use of the fresh parts of the plant (leaves, roots, bark, raw unripe berries) can lead to emesis, purgation, headache, dizziness, tachycardia and convulsions.

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[1902] Shapira-Nahor B. The effect of Sambucol on HIV infection in vitro. Annual Israel Congress of Microbiology, February 6–7, 1995.

Sanguinaria canadensis

Papaveraceae

Common name: Bloodroot

Habitat: The plant is native to N. America and Canada and grows in cool, moist, deciduous woods.

Botanical description: The plant is an herbaceous perennial. The rhizome is 1 cm. in diameter, 5 cm. in length, reddish brown and longitudinally wrinkled. The fracture is short and shows a whitish transverse section with numerous red latex vessels. **Parts used**: Root (harvested in early summer [May-June] or in autumn when leaves have dried.

Part used: rhizome

Historical Use: Sanguinaria has been used medicinally by Native Americans since at least the 1600's.

Constituents:

- Benzophenanthridine type isoquinolone alkaloids (4-7%): sanguinarine, chelerythrine, oxysanguinaridine
- protoberberine-type: berberine, coptisine
- protopine-type: protopine, alpha- and beta-allocryptopine.[1903]
- other alkaloids: chelilutine, chelirubine, protopine, sanguidimerine, sanguirubine, allocryoptopine, sanguidaridine, sanguilutine

Pharmacology: Alkaloids, principally sanguinarine, constitute the primary active compounds Sanguinaria, having antimicrobial, antifungal, antiinflammatory, and mast cell histamine release inhibition effects. Sanguinarine and chelerythrine have been shown to uncouple phosphorylation and intercalate with DNA, which may explain the antibacterial and antiviral properties of this plant.[1904]

The alkaloids are sometimes used in toothpaste and other oral hygiene products because they inhibit oral bacteria.[1905] In vitro studies indicate that the anti-plaque action of Sanguinaria is due to its ability to inhibit bacterial adherence to newly formed pellicle, its retention in plaque being 10-100 times its saliva concentration, and due to its antimicrobic properties. The MIC of sanguinarine ranges from 10 to 32 g/ml for most species of plaque bacteria.[1906]

Medicinal actions: Expectorant, antimicrobial, anesthetic.

Traditional Medicinal Use:

Cook described the dried root as a slow relaxant and stimulant, influencing the mucous membranes, gall-ducts, and secreting organs in general.

- Gastrointestinal Conditions: Small doses were used arouse the stomach in atonic dyspepsia/
- Hepatobiliary Conditions: Chronic torpor of the liver in bilious temperaments, and chronic jaundice, are the conditions in which its use was most indicated. For chronic affections of the skin, arising from hepatic torpor, Sanguinaria was used in quite small proportions to support relaxing alterants.
- Pulmonary Conditions: Small quantities were added to relaxants for expectorant purposes. It was indicated only in sluggish conditions. Cook combined it in limited quantities with Hydrastis and Lobelia for use in chronic catarrh and nasal polyps, as a snuff, if the mucosa was freely discharging and not too sensitive.
- Topical Applications: Cook found great benefit in applying the same combination above, in powder, upon indolent chancres; in a short time obtaining a discharge and the removal of the gray membrane, when the Sanguinaria may be omitted. The powder was considered a good application to fungus ulcers. Cook did not believe Sanguinaria acted as an escharotic, as is generally asserted.[1907]

Current Medicinal Use:

- Dental Conditions: The antimicrobial effects of Sanguinaria make it a potentially useful plant in oral rinses in order to reduce plaque and gingivitis. A toothpaste and oral rinse each prepared with Sanguinaria extract were studied in clinical trials involving 260 patients. The cumulative data from these trials demonstrated reduced plaque, gingival inflammation and bleeding within 14 days of use. These effects lasted for the duration of Sanguinaria use (up to 6 months in one study).[1908]
- Pulmonary Conditions: In the early 1800's, Sanguinaria was incorporated into the United States Pharmacopoeia in tinctures and cough syrups as an expectorant. Sanguinaria is most indicated in the treatment of bronchitis, emphysema, bronchiectasis, asthma, croup, and laryngitis. This plant exerts smooth muscle relaxing and antimicrobial properties while also causing expectoration. Sanguinaria is most indicated in chronic, congestive lung conditions. The cough is irritated and may be dry, and respiration is difficult. Overall, the person may describe itchy mucous membranes (ears, pharynx, larynx, trachea, rectum, vagina).

Sanguinaria is indicated in sore throat with swollen, beefy red mucosa. Sanguinaria combines well with resin-containing herbs such as Inula and Marrubium.

- Topical Applications: Sanguinaria is used as a component of “black salve”, a type of escharotic salve produced by a number of companies with varying recipes that are considered proprietary.

Pharmacy: 1:5 tincture—2-5ml TID
1 tsp. dried root/cup water; 1 cup TID

Contraindications: It is not an agent to be used in sensitiveness or irritability of any mucous membrane or other part. [1909] Sanguinaria is contraindicated in pregnancy.[1910]

Toxicity: Large quantities are nauseant, and even emetic.

Sarothamnus scoparius (Cytisus Scoparius) Fabaceae

Common name: Scotch broom

Habitat:

Botanical description: This is a large shrub which grows up to 6 feet tall. The dark green branches contain many stiff green leaves and yellow pea flowers are produced.

Parts used: Herba and Flora

Constituents:

- Cardioactive alkaloids: sparteine, sarothamnin, genistein
- oxytyramine

Pharmacology:

Sparteine, and to a lesser extent sarothamnin and genistein, appear to be an important alkaloids in slowing ectopic atrial depolarization and in reducing irritability in the conduction of the myocardium. Sparteine acts as a potassium channel antagonist, resulting in delaying systolic depolarization. Sparteine is a negative inotrope and a negative chronotrope. It prolongs the refractory period and raises the depolarization threshold, reducing the risk of fibrillation and extrasy stoles.[1911]

Sparteine was once used as an oxytocic but such use was discontinued after the discovery that about 5% of males and females studied were unable to metabolize sparteine by N-oxidation, likely due to a genetic defect. Such inability will result in uterine spasm in women.[1912]

Medicinal actions: Cardiotonic, anti-arrhythmic, hypertensive, narcotic, diuretic and purgative

Traditional Medicinal Use:

Cook described the flowers of Sarothamnus as primarily stimulating, and moderately relaxant, acting somewhat slowly but decidedly. In large doses, Sarothamnus was observed to be emetic and cathartic; in small doses, diuretic. Scurvy and jaundice have been successfully treated with it as well.

- Cardiovascular Conditions: The Eclectics used Sarothamnus in all chronic forms of edema of the thorax as it was said to never fail in increasing the flow of the urine.
- Genitourinary Conditions: Cook observed their chief influence on the kidneys, having used them in edema. He noted that Sarothamnus can readily overwork the kidneys.

Current Medicinal Use:

- Cardiovascular Conditions: The alkaloids effect the conductivity of the heart, not the contractility as do cardiac glycosides. Sarothamnus is used specifically to treat arrhythmias following myocardial infarction, sinus tachycardia, atrial and ventricular fibrillation, and ventricular extra systoles. A heart with extra systoles may respond favorably to Sarothamnus. Long-term therapy is often needed to effectively control these arrhythmias. Paroxysmal tachycardia will not respond to Sarothamnus.

Sarothamnus is also a peripheral vasoconstrictor, due primarily to the oxytyramine, so it increases venous return to the heart (helping to relieve edema). This increase in blood pressure along with normalized cardiac rate stimulates kidney diuresis. It should be used as a diuretic when there is low blood pressure and a weak heart.

- Gynecological Conditions: Sarothamnus stimulates uterine contractions. Sarothamnus is thus useful in post-partum hemorrhage.

Pharmacy: High doses of the herb are necessary to achieve therapeutic levels of sparteine and related alkaloids.

- Decoction:
  1 oz. flowers to 16 oz. water for 10 minutes, sig 4 oz. q hr, until it produces some effect, using about 1 pint in 24 hours (King)
  0.5 oz dried flowers to 10 oz. water; sig 1-2 oz. tid (Cook)
- Tincture (1:5 45% EtOH): 0.5-2 ml TID (Alschuler); 10 gtt bid (Mitchell)

Drug Interactions:[1913]

- **Quinidine, haloperidol, moclobemide** inhibit metabolism of sparteine, increasing the possibility of toxicity.
- **MAO inhibitors** may lead to a hypertensive crisis due to tyramines in the flowers.
- **Sympathomimetics** may result in hypertension due to additive effects
- **Antipyrine, rifampicin** may increase metabolism of sparteine.

- **Antihypertensives** will antagonize effects.

Contraindicated: Caution should be exercised when prescribing Sarothamnus to people with high blood pressure because the increase in peripheral vasoconstriction will increase blood pressure. Sarothamnus should not be used during pregnancy, in spleen, liver or acute kidney disorders or in A-V block.[1914]

Toxicity: Signs and symptoms of toxicity include a staggering gait, impaired vision, and profuse vomiting and sweating.[1915]

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Sassafras lignum/ S. albidum — Lauraceae

Common name: Sassafras, Cinnamon wood

Habitat: native to North America

Botanical description: A decidious tree, it stands 30 m tall with multiple slender branches and smooth orange-brown bark. The leaves are alternate and vary from 2- to 3- lobed to ovate petiolate leaves. Small yellow flowers are arranged in cymes. The tree produces cinnamon-like berries. The roots are large and woody. The root bark is soft and spongy, rough and a reddish brown color. Native to North America (Eastern)

Parts used: root bark, collected in autumn

Constituents [1916]

- Volatile oil (6-9%): chief components safrole (up to 90%), 5-methoxyeugenol (up to 30%), asarone (up to 18%), camphor (up to 5%)
- Isoquinoline alkaloids: of the aporphine and reticuline type (less than 0.1%)
- Lignans: sesamin, desmethoxyaschantin; Tannins; Sitosterol and other sterols; Alkaloids: aporphine, benzylisoquinoline derivatives; Resin

Pharmacology: Safrole is carcinogenic in animals (causing primarily liver cancer).[1917] Safrole, and its metabolite, 1'-hydroxysafrole, act as a nerve poison causing lowered body temperature, exhaustion, tachycardia and collapse. Safrole is absorbed slowly from the alimentary canal, is expired from the lungs and excreted through the kidneys where it is oxidized into piperonalic acid.[1918]

A case report describes diaphoresis caused by consuming sassafras tea. [1919]

Medicinal actions: Carminative, diaphoretic, antiseptic, antirheumatic, alterative

Traditional Medicinal Use:

Sassafras has been used for hundreds of years as a medicinal agent for chronic diseases and Sassafras was considered to be an alterative with efficacy in chronic inflammatory disorders of the skin and joints. .

Cook added that Sassafras is an aromatic relaxant and stimulant with the warm infusion being a fair stimulating diaphoretic and nervine. He described the oil as among the best of the nervine stimulants and relaxants.[1920]

- Metabolic Conditions: The Eclectics generally used Sassafras in combination with other alteratives, particularly Podophyllum.
- Cardiovascular Conditions: Cooked called attention to its action as a stimulant to the capillary circulation and the absorbents (venules and lymphatics).
- Dermatological Conditions: Sassafras was utilized in the treatment of many cutaneous eruptions, particularly in combination with vapor, spirit or sulphur baths.
- Gynecological Conditions: The oil was used to afford relief in the distressing pain attending menstrual obstructions, and that following parturition.
- Infectious Conditions: The Eclectics employed this herb in the treatment of syphilitic affections, gonorrhea and scrofula.
- Inflammatory Conditions: chronic rheumatism
- Ophthalmologic Conditions: The mucilage of the pith was used as a local application in acute ophthalmia.
- Topical Applications: Externally, Sassafras was used as a rubefacient, in painful swellings, sprains, bruises, rheumatism, and under such circumstances, to promote the absorption of effused materials. Sassafras was also said to check the progress of gangrene. Used internally and applied externally Sassafras was reputed an excellent treatment for Rhus poisoning.
  Sassafras oil was used by the Physiomedicalists in rubefacient liniments for rheumatism, deep-seated congestions and inflammations, edema, abdominal and pelvic sufferings, sprains, bruises, etc.

Current Medicinal Use:

The root has a spicy and sweet taste and as such was a popular tea and flavoring agent. The oils in sassafras are stimulating. Diaphoresis occurs with internal use. Sassafras was most indicated in chronic mucous producing conditions (i.e. bronchitis, cystitis, vaginitis, etc.). Sassafras also provides some analgesic effects and was thus used acutely in addition to its long-term. However, the discoveries of the toxic and carcinogenic potential of sassafras have limited it to external use only.

- Topical Applications: Sassafras is effective as a topical application for antiseptic and anti-inflammatory purposes. It is effective for inflamed arthritic joints primarily through its rubefacient action. Its application will relieve pain and swelling with the additional benefits of acting as a local antiseptic. The antiseptic quality of sassafras make it a useful topical treatment for chronic inflammatory disorders of the skin with secondary infections (i.e. eczema) and for tinea infections.

Current Research Review:

- Search of Medline revealed no human trials as of November 2002.

Pharmacy: It is recommended to use this plant externally only.
Internal: 2.5 g (3/4 tsp.) dried root bark/cup/day; hot infusion for 10 min.; strain and drink.
External: Poultice, Compress, oil

Contraindications: Sassafras should be avoided in early pregnancy due to emmenagogue properties and prolonged use (daily for a year) of forms containing the essential oil component should be avoided.[1921]

Toxicity: In large doses and/or prolonged use, lowered body temperature, exhaustion, tachycardia, and collapse may occur. Safrole inhibits hepatic microsomal enzyme function, prolonging hexobarbital induced necrosis in animal studies.[1922]

[1916] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[1917] Miller EC, et al *Cancer Res* , 1983, 43: 1124.

[1918] Grieves M, *A Modern Herbal*, 1971, (NY: Dover Publ): 715.

[1919] Sassafras tea and diaphoresis. Postgrad Med. 1991 Sep 15;90(4):75-6.

[1920] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985

[1921] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 119

[1922] Brinker

Schisandra chinensis — Magnoliaceae

Common name: Wu-wei-zi fruit

Habitat:

Botanical description: Schisandra is a Chinese climbing shrub.

Historical uses: This berry has been used in China as a tonic herb, known as "five-taste fruit" which acts on all organs.

Parts used: Berry

Constituents:

- Schizandrin
- Biphenyl octenoid lignans (wuweizisu C, wuweizichun B, schisantherin A, B, C and D)

Pharmacology The major active compounds in Schisandra are lignans (schizandrin, deoxyschizandrin, gomisins, and pregomisin) found in the seeds of the fruit. Animal studies suggest Schisandra may protect the liver from toxic damage, improve liver function, and stimulate liver cell regrowth. Part of how Schisandra lignans appear to protect the liver is by activating the enzymes in liver cells that produce glutathione, an important antioxidant substance. [1923] Lignans also interfere with platelet activating factor, a chemical that promotes inflammation in a number of conditions [1924].

Medicinal actions: Astringent, sedative, aphrodisiac, kidney and skin tonic, anxiolytic, hepatoprotective, adaptogenic

Medicinal use: Schisandra is a tonic herb and therefore should not be used in acute conditions. Schisandra strengthens the lungs, kidneys and adrenals. Schisandra is known to calm the shen and is therefore useful for anxiety and insomnia, palpitations, and forgetfulness due to excessive stress. As a kidney strengthener, it is employed in diseases with spontaneous perspiration or night sweats. Schisandra fruit may also have an adaptogenic and action, much like the herb Asian ginseng, but with weaker effects. Laboratory work suggests that Schisandra may improve work performance, build strength, and help to reduce fatigue.[1925]

- Hepatobiliary Conditions: Schisandra protects against liver damage. Mills and Bone consider Schisandra as a hepatic stimulant and hepatorestorative, increasing liver metabolism and improving detoxification processes. [1926] In the presence of toxins, Schisandra reduces liver damage, improves protein synthesis and accelerates liver repair. Schisandra elevates liver microsomes which increase the ability of the liver to detoxify foreign substances in the body. Schisandrin lignans lower SGPT levels and Schizandra is a useful remedy in chronic hepatitis.[1927]
- Infectious Conditions: In a Chinese study of 189 people with hepatitis B, those given Schisandra reportedly improved more rapidly than those given vitamins and liver extracts [1928].
- Neurological Conditions: The lignans found in Schisandra (lignans are also found in Eleutherococcus senticosus and Viscum album) improve concentration, fine coordination and sensitivity. By affecting the CNS, Schisandra can improve vision, enlarge the visual field, improve hearing and heighten skin sensory discrimination. The CNS effect of Schisandra is stimulatory and also results in decreased fatigue and improved endurance.

Current Research Review:

- **Sports medicine:**
  - **Salivary nitric oxide content:**[1929]
    - Design: Placebo-controlled double-blind study.
    - Patients: Athletes
    - Therapy: Standardized extracts of the adaptogen herbal drugs Schizandra chinensis and Bryonia alba roots.
    - Results: In the beginning of a test with athletes, Schizandra chinensis and Bryonia alba extracts increased the concentration of NO and cortisol in blood plasma and saliva similar to athletes with heavy physical exercise. These results correlate with an increased physical performance in athletes taking adaptogens versus athletes taking placebo. In contrast, after treatment with the adaptogen, heavy physical exercise does not increase salivary NO and cortisol in athletes, whereas in athletes treated with placebo, heavy physical exercise increased salivary NO. These results show that the salivary NO test can be used both for evaluation of physical loading and stress protective effect of an adaptogen.

Pharmacy: 400-450 mg powdered herb in capsules TID
Tincture 1:3 30% EtOH; sig 1-2 ml TID
Infusion 1-2 tsp. berries/cup water; sig 1 cup TID

Toxicity: No information is currently available.

[1923] Lininger et al: Healthnotes, Clinical Essentials, Prima Publishing, Rocklin, CA. 2001.

[1924] Jung KY, Lee IS, Oh SR, et al. Lignans with platelet activating factor antagonist activity from *Schisandra chinensis* (Turcz) Baill. *Phytomedicine* 1997;4:229–31.

[1925] Lininger et al: Healthnotes, Clinical Essentials, Prima Publishing, Rocklin, CA. 2001.

[1926] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 177.

[1927] Evans, W.C., Trease and Evans' Pharmacognosy, (WB Saunders Co. Ltd: London), 14th ed., 1996:438

[1928] Liu G-T. Pharmacological actions and clinical use of *Fructus schizandrae*. *Chin Med J.* 1989;102:740–749.

[1929] Panossian AG, Oganessian AS, Ambartusmian M, et al. Effects of heavy physical exercise and adaptogens on nitric oxide content in human saliva. *Phytomedicine* 1999;6(1):17-26.

Scilla maritima a.k.a. Urginea maritima

Liliaceae

Common name: Squill

Habitat:

Botanical description: This plant has a perennial root with a large coated bulb that is full of thick juice. The leaves of this plant are 3-4 inches wide, bright green and somewhat thick, and filled with latex. The stem grows to 3 feet in height. The flowers grow in spikes and are small and white.

Parts used: Bulb (inner scales)

Constituents:

- Cardioactive glycosides [0.15-2% in dried powder]: 66% proscillaridin and scillaren A, the remaining 33% composed of at least 25 other glycosides
- mucilage, fructooligosaccharides

Medicinal actions: Cardio-tonic, diuretic, expectorant, emetic

Historical Use: Nicolas Culpeper refers to this plant as a hot and biting plant. The bulb is very bitter and will blister the skin if handled excessively.

Traditional Medicinal use:

Specific Indications and Uses: Chronic cough, with scanty, tenacious sputa; scanty, high-colored urine, with sense of pressure in the bladder; over activity of the kidneys with inability to retain the urine; dropsy, with no fever or inflammation, and a general asthenic condition.[1930]

King described Squill as an irritant, emetic, cathartic, diuretic, and expectorant. The juice of fresh Squill acts as a rubefacient, and it stimulates all of the secretory organs.

- Cardiovascular Conditions: Urginea was used extensively by the Eclectics in edema of cardiac origin, but not due to organic changes in the heart. Urginea was considered to act better in general, asthenic and passive cases rather than in localized edema.

King noted that it may be made to restrain or to increase the amount of urine secreted, according to dose. To check the renal flow, the minute dose should be employed. While in the majority of cases Urginea was employed with Digitalis, in small doses (1 to 10 drops) of a strong tincture it was observed to act favorably where there is a "dry, harsh skin, parched tongue, fevered lips, and contraction of features" (Scudder).

- Pulmonary Conditions: King noted that small doses of Urginea relieve irritation of the mucous surfaces and check excessive secretions. As an expectorant it will be found useful in chronic catarrh, asthma, pneumonia and other chronic bronchial affections. In chronic respiratory troubles, with little febrile reaction and no inflammation and scanty tenacious sputa, 1 part Squill may be added to 3 parts Prunus.

Current Medicinal Use:

- Cardiovascular Conditions: The cardiac glycosides create positive inotropic and negative chronotropic effects on the heart. These glycosides are strong in their physiological action, due to absorption (15% for scillaren and 20-30% for proscillaridin) and half-life (24 hours for proscillaridin). Therefore, Urginea is indicated in mild to moderate heart failure. However, Urginea will increase arterial tension more strongly than Digitalis. Urginea is also a potent diuretic (due to the mucilage) and is therefore especially well indicated in a person with congestive heart failure. A person with both cardiac and kidney weakness should respond favorably to Scilla.
- Pulmonary Conditions: Scilla is also used as a soothing expectorant when there is thick sputum (again due to the mucilage). It is a stimulating or reflex expectorant that provokes increased mucociliary activity by reflex stimulation of the upper digestive wall.[1931] In larger amounts, Urginea will increase bronchial secretions, however, in smaller doses it will decrease excessive secretions in the lung and thus aid in expectoration. The combined actions of Scilla make this plant extremely well-indicated in someone with R-sided heart failure (this condition can lead to pulmonary edema and dependent edema). Other indications for its use as a stimulating expectorant include cough secondary to bronchial congestion, bronchitis and emphysema.
- Musculoskeletal Conditions: Stimulating expectorants may also be usefully applied in some cases of rheumatic and connective tissue diseases.[1932]

Pharmacy:

Infusion
Tincture

1:5 45% sig 0.5-2 ml TID (Alschuler)
1:10 10 gtt bid (Mitchell)
0.1-0.5 g of standardized extract powder [standardized to 0.2% proscillaridin]

Drug Interactions: [1933]

- Certain other substances predispose to toxicity (similarly to Digitalis), namely: potassium depleting drugs such as diuretics, quinidine, anthraquinone glycoside containing botanicals and corticosteroids.
- Caution when combining with other cardiac glycoside containing botanicals due to additive effects.

Contraindications: King noted that Urginea is contraindicated where there is inflammation or vascular excitement. Brinker contraindicates the use of Urginea in the presence of gastrointestinal irritation and pregnancy. As a reflex expectorant Urginea can transiently irritate the gastric mucosa and should be used with caution in dyspeptic conditions, dry and irritable conditions of the lungs, asthma, and in children.[1934]

Toxicity:

In small doses it may cause nausea and depression of the pulse, without stimulating the circulation. Larger doses result in severe and painful vomiting and purging, G.I. inflammation, decreased bloody urine, dullness and stupor, intermittent paralysis and convulsions. Death takes place within 10 to 24 hours, with a dose as low as 24 grains (1440 mg).[1935]

King noted that continuous use of Squill gives rise to gastric irritation and loss of appetite, and when these effects are the result of its internal use the tincture may be rubbed into the skin or applied to the abdomen by means of compresses saturated with it.

[1930] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[1931] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 209

[1932] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 210

[1933] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 234

[1934] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 210

[1935] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

Scutellaria baicalensis

Common name:

Habitat:

Botanical description:

Parts used:

Constituents:

- flavonoids: bacalein

Pharmacology:

The root of Chinese skullcap contains a flavonoid substance, baicalin that has been shown to have protective actions on the liver. Anti-allergy actions and the inhibition of bacteria and viruses in *in vitro* studies has been documented with Chinese skullcap. Some initial Chinese studies, generally of low quality, suggest that Chinese skullcap may help people with acute lung, intestinal, and liver infections, as well as hay fever and hypertension. More extensive clinical work is needed to clearly demonstrate Chinese skullcap's effectiveness for these conditions. [1936]

Medicinal actions:

Traditional Medicinal Use:

Current Medicinal Use:

Pharmacy: Baicalein blocks the action of phospholipase, possibly by inhibiting calcium influx into the cell, thereby inhibiting the release of calcium from the sarcoplasmic reticulum inside the cell.

Contraindications:

Toxicity:

[1936] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

Scutellaria laterifolia

Lamiaceae (Labiatae)

Common name: Skullcap, Hoodwort, Quaker Bonnet, Helmet Flower

Habitat:

Botanical description:
The leaves are opposite, cordate-lanceolate, shortly stalked with a tapering apex. The flowers are blue with a helmet-shaped upper lip and occur in axillary racemes.

Parts used: Herba

Constituents: Flavonoid glycoside: scutellarin, scutellarien and others; Iridoids: catalpol; Volatile oil; Waxes; Tannins, Minerals

Pharmacology: In contrast to its Chinese relative, Scutellaria baicalensis, there is not yet experimental data to support the medicinal claims for this plant.
Scutellaria laterifolia
The active agents in the leaves are scutellarin, essential oil as well as fatty oil, tannin, and resin. Skullcap has sedative, antispasmodic (little research), anti-inflammatory, and lipid peroxidation inhibitor effects. Few studies have been completed on the constituents of American Skullcap. One of its constituents, scutellarin, has been shown to have mild sedative and antispasmodic actions. Human studies have not yet been conducted to confirm the use of skullcap for anxiety or insomnia. [1937]

Medicinal actions: Sedative, nervine relaxant, nervine trophorestorative, mild antispasmodic (compare w/ Stachys), tonic

Traditional Medicinal Use:
Specific Indications and Uses.—Nervousness, attending or following acute or chronic diseases, or from mental or physical exhaustion, teething, etc.; nervousness manifesting itself in muscular action; tremors, subsultus, etc.; hysteria, with inability to control the voluntary muscles; functional cardiac disorders of a purely nervous type, with intermittent pulse.[1938]
Cook described Scutellaria as equally relaxant and stimulant with antispasmodic and tonic properties that acting on and through the nervous system. King described Scutellaria as a tonic, nervine, and antispasmodic. He noted that the warm infusion has a tendency to be mildly diaphoretic and the cold had a tonic influence. Either preparation was known to leave a toning and soothing impression on the system, without being excitable or irritable as is the case with some other nervines.

- Cardiovascular Conditions: Scutellaria was observed to control functional cardiac disorders secondary to nervous causes.
- Dental Conditions: Scutellaria infusion was given to children during teething.
- Nervous Conditions: Scutellaria was considered one of those valuable agents for the nervous system by both the Eclectics and Physiomedicalists. Through the nervous system, Scuttelaria was though to reach localized pain throughout the body when due to nervous feebleness with agitation, but not associated with acute or sub-acute inflammatory excitement.

Scuttelaria was applied freely in all cases of nervous excitability, attending or following acute or chronic diseases, regardless of cause. Nervous excitability with feebleness, fatigue or depression also called for Scutellaria.

Some specific conditions for which it was applied include chorea, convulsions, tremors, intermittent fever, neuralgia, and delirium tremens. The Physiomedicalists also used Scutellaria for the insomnia that follows opium withdrawal; however, King did not agree with its effectiveness for this application.

Scutellaria was used for spasmodic difficulties secondary to nervous irritation such as some cases of gastrointestinal pain or gynecological complaints.

Current Medicinal Use:
Scutellaria is a sedative, antispasmodic, a relaxant and nervous trophorestorative, a mixture of qualities not found in most other herbs.

- Cardiovascular Conditions: Scutellaria is used to ease emotional and mental tension and is combined with herbs such as Leonurus or Salvia militorrhiza for palpitations. [1939]
- Gastrointestinal Conditions: Stress may be the underlying cause of gastroesophageal reflux, especially if irritable bowel disease is evident. Sedative herbs such as Scutellaria are thus indicated. [1940]
- Gynecologic Conditions Herbal antispasmodics and relaxants such as Scutellaria can be useful for spastic dysmenorrhea.
- Inflammatory Conditions: Herbal sedatives such as Scutellaria may also be used in some cases of inflammatory disease.
- Nervous Conditions: General indications for sedatives include moderate tension and anxiety syndromes, difficulty falling asleep and coming off conventional prescription sedatives. Sedatives can also be used to calm restlessness disturbing convalescence. Antispasmodic and relaxant herbs can be used in cases of irritability and restlessness, tension headaches and migraines.

As a nervous trophorestorative, Scutellaria can be used in cases of nervous exhaustion, neuralgia, herpes infections, depressive states and insomnia marked by waking up in the early hours of the morning after falling asleep easily. Other applications include convalescence and neurasthenia (see Avena).

Scutellaria works well for states for heightened anxiety with accompanying muscle and nervous tension manifested as restlessness, anxiety and insomnia. Scutellaria can be used acutely for this purpose as the volatile oils and flavonoids presumably act to relieve spasm and inflammation. Scutellaria tonifies the nervous system, which makes it indicated in persons with run-down nervous systems. Scutellaria combines well with Stachys.

Scutellaria can also be used long-term for nervous tension with an underlying condition of nervous exhaustion. The long-term action of Scutellaria is most likely the result of the minerals and flavonoids. It is also indicated in persons who have general irritability and culminate their stress into angry outbursts. Scutellaria is also indicated for persons with muscular twitching and tremors. Scutellaria also allows inner inspirations to become strengthened and cools the mind for meditation. Compare it with Verbena.

Pharmacy: Scutellaria is indicated for short- and long-term use depending on the action desired. For treatment of moderate tension and anxiety, short-term or intermittent use is indicated. Sedatives may be taken as required, at bedtime or with food. Administration should be for a fixed time as they can be used to suppress an underlying condition. Secondly, the body may habituate resulting in diminishing returns.[1941]

For antispasmodic and relaxant effects, hot infusions made with generous quantities and large doses are indicated. Scutellaria should not be decocted and should be covered when infused.

The trophorestorative effect is akin to being nutritional in effect being taken as needed or before food. Long-term therapy is the generally application.

Powdered herb: sig 1-2 gm/day
Infusion: 1 tsp – 1 TB / cup; sig 1 cup TID or hs
Tincture [fresh or dried (1:5)]; sig 2-4 ml TID; weekly max. = 100 ml

Drug Interactions:

- **Sedative and Tranquilizing Medicines:** For some herbs whose mechanism of activity has not yet been determined, caution is advised due to possible adverse effects with combination.[1942]

Contraindications:[1943] Although the sedative class of herbs has a beneficial effect on the nervous system, direct substitution for conventional sedatives is not advised. Rather, careful planning and co-management is advised. Sedatives are generally contraindicated for depression and insomnia marked by increasing restlessness during the early morning. Trophorestoratives are to be used with caution in extremely debilitated patients.

(Note: A disparity appears here regarding the sedative effect and trophorestorative effect of Scutellaria. In regard to the treatment of depressive states, sedatives are contraindicated while nervous trophorestoratives are indicated. Subsequently, a second contradiction arises discussing insomnia in the early morning: sedatives are contraindicated while nervous trophorestoratives are indicated. Likely, utilizing small, frequent doses allows for a trophorestorative effect while larger doses provide a sedative effect.).

Toxicity: Scutellaria is a gentle herb, without concern about toxicity. Teucrium species (germander) has been substituted for Scuttelaria at the manufacturing level, compromising the safety of the product.[1944]

[1937] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[1938] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[1939] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 175

[1940] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 175

[1941] Mills and Bone p. 233

[1942] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p 237

[1943] Mills and Bone p. 233

[1944] Mills and Bone p. 109

Serenoa repens — Arecaceae

Common name: Saw palmetto

Habitat: Native to the coastal regions of the southern states of the U.S., from S. Carolina to Florida and southern California.[1945]

Botanical description: [1946]

- Flower: Cream inconspicuous flowers in short, densely pubescent, paniculately branched inflorescens.
- Fruit: Deep purple to almost black, ovate, 3 cm long, 1-seeded berry with hard but fragile pericarp that covers a pale brown, spongy pulp. The endocarp is thin and papery. Fruit is slightly wrinkled, 1.25-2.5 cm long, 1.25 cm diameter. The hard seed is pale brown, oval, or globular, and has a hilum near the base. The whole panicle weighs up to 4 kg.
- Leaves, Stem, and Root: Bushy palm up to 6 m in height. Large, yellow-green leaves with up to 20 segments form a crown.

Part used: berry

Energetics:

Constituents: [1947,1948,1949]

- The lipid-soluble compounds are thought to be the major pharmacological components. The purified fat-soluble extract is used medicinally and contains between 85 and 95% of fatty acids and sterols
- 1.5% of a fruity-smelling oil containing saturated and unsaturated fatty acids and sterols. About 63% of this oil is composed of free fatty acids including capric, caprylic, caproic, lauric, palmitic, and oleic acids
- Beta-sitosterol and its glucoside
- Carotenes, lipase, tannins, and sugars

Pharmacology:

- The primary therapeutic action of saw palmetto extract in the treatment of BPH has been thought to be a result of inhibition (via blocking 5-alpha reductase) in the intraprostatic conversion of testosterone to dihydrotestosterone (DHT) and inhibition of its intracellular binding and transport. However, more recent research has suggested additional mechanisms of action, including anti-estrogenic and receptor site-binding effects.[1950]
- Additional effects Include spasmolytic activity In animals, antiestrogenic activity, and antiinflammatory activity.[1951]

Medicinal actions:

- Anti-androgenic, anti-exudative.[1952]
- Anti-inflammatory, endocrine agent, spasmolytic, possibly anti-androgenic.[1953]

Traditional medicinal uses:

- The dried berries, liquid extract, or pressed oil were used in respiratory complaints, esp. if accompanied by chronic catarrh, and genitourinary complaints, esp. to reduce irritation (e.g., cystitis) and for prostatic hypertrophy. Was considered to be a tissue building plant.[1954]
- Eclectics used saw palmetto for respiratory problems, atrophy of the breast, ovaries and testes, and BPH. Was also used to treat inflamed gonads in the male or female, uterine hypertrophy, and as an aphrodisiac.[1955]

Current medicinal uses:

- Prostate disorders:
  - BPH - COCHRANE REVIEW: 2939 men from18 randomized trials lasting 4 to 48 weeks were assessed. 16 trials were double-blinded and treatment allocation concealment was adequate in 9 studies. Compared with placebo, Serenoa repens improved urinary symptom scores, symptoms, and urinary flow measures. Compared with finasteride, Serenoa repens produced similar improvements in urinary symptom scores and peak urine flow. Adverse effects due to Serenoa repens were mild and infrequent. Withdrawal rates in men assigned to placebo, Serenoa repens or finasteride were 7%, 9%, and 11%, respectively. Reviewers' conclusions: The evidence suggests that Serenoa repens improves urologic symptoms and flow measures compared with placebo. Serenoa repens produced similar improvement in urinary symptoms and flow compared to finasteride and is associated with fewer adverse treatment events. The long term effectiveness, safety and ability to prevent BPH complications are not known.
  - Non-infectious prostitis (extrapolations from pharmacological data) [1956]

Pharmacy:

- Berry:
  - 1-2 g QD[1957]
  - 2-4 g dried berry QD[1958]
- Standardized extract:
  - Dosages used in studies demonstrated efficacy at 160 mg BID or 320 mg QD.[1959]
  - 160 mg BID of liposterolic extract (8:1-10:1 concentrate compared to the original dried berries [1960]
  - 320 mg of lipophilic ingredients extracted with lipophilic solvents (hexane or ethanol 90% v/v) QD.[1961]
  - BPH: Liposterolic extract (standardized to 85-95% fatty acids and sterols) 160 mg BID, corresponding to 3-4 g dried berries QD[1962]
- Fluid extract:
  - ½-1 drachm.[1963]
  - 1:2 extract (45-90% EtOH): 2-4 mL QD[1964]
- Solid extract: 5-15 grains.[1965]

Drug interactions: None known[1966]

Contraindications: None known[1967]

Toxicity/Side effects:

- Rare cases, stomach problems. [1968]

[1945] *PDR for Herbal Medicines,* 2nd ed., Medical Economics Company, Montvale, New Jersey, 2000, p.665

[1946] Ibid, pp. 664-5

[1947] Joseph E. Pizzorno Jr, Michael T. Murray (eds.), *Textbook of Natural Medicine*, 2nd ed., Churchill Livingstone, Edinburgh, 1999, Vol. I, pp. 943-4

[1948] Simon Mills, Kerry Bone, *Principles and Practice of Phytotherapy: Modern Herbal Medicine,* Churchill Livingstone, Edinburgh, 2000, p.524

[1949] Lininger et al, *Healthnotes*: *Clinical Essentials*, *Herb Monographs*, Prima Publishing, Rocklin, CA, 2001

[1950] Pizzorno, Vol. I, p. 944

[1951] Mills, pp.525-6

[1952] Mark Blumenthal et al (eds.), *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, American Botanical Council, Austin, Texas, 1998, p.201

[1953] Mills, p. 523

[1954] Mrs. M. Grieve, *A Modern Herbal: The Medicinal, Culinary, Cosmetic and Economic Properties, Cultivation, and Folklore of Herbs, Grasses, Fungi Shrubs &Trees with Their Modern Scientific Uses*, Dover Publications, Inc, New York, 1971, Vol. II, p.720

[1955] Harvey Wickes Felter and John Uri Lloyd, *King's American Dispensatory,* 18th ed., 3rd revision, Eclectic Medical Publications, Portland, 1983, Vol. 2, pp.1750-2

[1956] Mills, p.523

[1957] Blumenthal, p. 201.

[1958] Mills, p.524

[1959] *PDR,* p.664-5

[1960] Mills, p.524

[1961] Blumenthal, p.201

[1962] Melvyn R. Werbach and Michael T. Murray, 2nd ed., *Botanical Influence on Illness: A Sourcebook of Clinical Research,* Third Line Press Inc., Tarzana, California, 2000, p.121

[1963] Mrs. M. Grieve, *A Modern Herbal: The Medicinal, Culinary, Cosmetic and Economic Properties, Cultivation, and Folklore or Herbs, Grasses, Fungi Shrubs &Trees with Their Modern Scientific Uses*, Dover Publications, Inc, New York, 1971, Vol. II, p.720

[1964] Mills, p.524

[1965] Grieve, p.720

[1966] Mills, p.531

[1967] Mills, p.531

[1968] Blumenthal, p.201

Selencereus grandiflorus (Cactus grandiflorus, Hylocereus undatus, Peniocereus (Cereus) greggii) Cactaceae

Common name: Night blooming Cereus/Cactus

Habitat:

Botanical description: During June, this cactus blooms for two or three nights with 2-3 in. slender petalled white flowers. In the fall, the ovaries mature into red, pear-shaped, edible fruit. For the rest of the year, the cactus is brownish-green colored, with tall skinny stems 0.5-1 inch around, 2 to 6 feet tall, and weakly spined. A large tuber (5-10#) supports the plant.

Parts used: Herb and stems

Constituents:

- Cardiac glycosides: peniocerol, viperidone, desoxyviperidone, viperidinone, hordenine
- B-sitosterol

Pharmacology: The alkaloid hordenine increases blood pressure by liberating NE and inhibiting NE uptake.[1969]

Medicinal actions: Cardio-tonic, anti-arrhythmic, sedative, diuretic

Traditional Medicinal Use:

Specific Indications and Uses: Impaired heart-action, whether feeble, violent, or irregular; cardiac disorder with mental depression or nervousness, precordial oppression, anxiety, apprehension of danger, or death; hysteria; tobacco heart; nervous disorders, with heart complications; vertex headache; vaso-motor spasms.[1970]

Cactus has been found useful in virtually any condition that is secondary to cardiac dysfunction including cerebral congestion, mental derangements, rheumatism, inflammations of mucous membranes, prostatic diseases, irritable bladder, renal congestion, general dropsy, edematous condition of the limbs, dysmenorrhea, chronic bronchitis, eye and ear conditions, etc.

- Cardiovascular Conditions: King observed that Cactus impresses the sympathetic nervous system, and is especially active in its power over the cardiac plexus through the superior cervical ganglion, expending its force in regulating the action of the heart and controlling the cerebral circulation, thus giving increased nutrition to the brain. The effects of Cactus were noted to permanent and not merely temporary. According to Prof. Scudder (Spec. Med.), it neither increases nor depresses innervation; that it is neither stimulant nor sedative. King noted the state of the nervous system in cardiac diseases that indicated Cactus: there is a marked mental depression, often leading to hypochondria and fear of impending death. Precordial weight and oppression and difficult breathing also occur.

Cactus was considered one of the best of cardiac tonics, influencing functional disorders; organic conditions were observed to only benefit in a small measure. However, allopathic physicians considered Cactus a valuable agent in mitral regurgitation due to valvular lesions.

King considered it the remedy for almost all functional cardiac irregularities such as palpitation, pain, cardiac dyspnoea, intermission in rhythm, etc. In cardiac pain of a constrictive character, as if the organ were held with a strong band, it was considered to have the most prompt effect of all cardiac remedies.

During menstrual periods and at the menopause, nervous women frequently experience unpleasant cardiac disturbances of a functional character which responded well to Cactus.

Current Medicinal use:

- Cardiovascular Conditions: Selencereus is a cardio-tonic plant neither stimulating or sedating, but impressing normalizing effect on cardiac rhythm as a result of modulation of sympathetic output. Cardioactive glycosides give this plant a cardio-tonic effect and positive inotropic effect. However, it does not possess a negative chronotropic effect. Cactus acts upon the sympathetic nervous system, enhancing the output to the cardiac plexus. In sufficiently large therapeutic doses, cactus will quicken a slow heart rate.

It is specific for vague chest pain and shortness of breath associated with tobacco and caffeine abuse and with depression as a reaction to stress. As a cardio-tonic, cactus may also be used in endocarditis and pericarditis, cardiac weakness following over-exertion, chest discomfort associated with menstruation, or weakened heart with renal congestion (it is a mild diuretic).

Cereus also reduces cardiac arrhythmias and paroxysmal tachycardia secondary to altered nervous stimulation and weakness of the myocardium. Selencereus is especially indicated in valvular disorders of the heart when there is associated arrhythmia. Dr. Bill Mitchell uses Cactus with 200 mg each Mg and K aspartate to correct an irregular pulse.

- Pulmonary Conditions: Selencereus may also be used to treat bronchitis with rapid, shallow breathing and a dry, tight sensation across the chest.[1971]

Pharmacy

Tincture 1:5 45% sig 0.1-2 ml TID

20 gtt bid-tid (Mitchell)

10 gtt in small amount of water q min for 3-4 doses for angina (Mithcell)

Drug Interactions:

- **MAO Inhibitors** may potentiate cardiac effects as hordenine is metabolized by MAO.

Contraindications:

Brinker contraindicates the use of Cactus in high blood pressure or heart over activity due to cardiostimulant, positive inotropic and hypertensive effects of hordenine (empirical, animal studies)

Toxicity:

As a secondary effect of over-stimulation, it may induce heart-failure. The tincture, in large doses, produces gastric irritation, and also affects the brain, causing confusion of mind, hallucination, and slight delirium. In excessive doses, a quickened pulse, constrictive headache, or constrictive sensation in the chest, cardiac pain with palpitation, vertigo, dimness of sight, over-sensitiveness to noises, and a disposition to be sad or to imagine evil, are among its many nervous manifestations. Melancholia often follows such action. It is generally conceded, however, that the mental, cerebral, gastric, and other effects are secondary to and dependent largely upon the primary effects of the drug upon the heart.

In sufficiently large doses it acts as an intense irritant to the cardiac ganglia, producing thereby irritability, hyperaesthesia, arythmia, spasm and neuralgia of the heart, and even carditis and pericarditis.

Tachycardia, arrhythmia, cardio-spasm, mental confusion, violent throbbing headaches, vertigo, hyperasthesea, amblyopia, gastrointestinal upset, quickened pulse, chest constriction, noise sensitivity, sadness and paranoia followed by depression, pericarditis. [Brinker, The Toxicology of Botanical Medicines, 24]

Silybum marianum (Carduus Marianus)

Common name: milk thistle, St. Mary's thistle

Habitat:

Botanical description: Mary thistle is an annual, or biennial plant, glabrous, or but slightly wooly, growing to a height of 2 or 3 feet, and branching but little. Its leaves, which are shining and smooth above, are marked with white veins; the lower leaves are deeply pinnatifid, the lobes being broad and very prickly; the upper ones clasp the stem by prickly auricles, and are scarcely decurrent. The large, drooping flower heads, with purple florets, are solitary and terminal upon the branches. The involucral bracts are very broad at the base and have a stiff, spreading leaf-like appendage, terminating in a long spine, and bordered at its base with prickles. The fruit is an achenium. The pappus hairs are simple.[1972]

Part used: seed

Historical use:

Energetics: No information is currently available.

Constituents:

- Bioflavonoids: Silymarin is made up of three parts: silibinin, silidianin, and silicristin. Silibinin is the most therapeutically active constituent.

Pharmacology

Milk thistle extract may protect the cells of the liver by blocking the entrance of toxins and helping metabolize these toxins. Silymarin has also been shown to regenerate injured liver cells.[1973] Silymarin has the ability to block fibrosis, a process that contributes to the eventual development of cirrhosis in persons with inflammatory liver conditions secondary to alcohol abuse or hepatitis.[1974]

Silymarin is also a powerful antioxidant.[1975]

Medicinal actions: Hepatotrophorestorative, galactagogue

Traditional Medicinal Uses:

Specific Indications and Uses: Splenic, hepatic and renal congestion, face sallow, appetite capricious; nervous irritability; despondency; physical debility; pain in either hypochondria; pelvic tension and weight; congestion of the parts supplied by the celiac plexus and nerves; non-malarial splenic hypertrophy; dull, aching, splenic pain passing up under the left scapula, and associated with pronounced general debility and despondency; general bilious conditions accompanied with stitches in the right side, with hard and tender spots; gall stone; jaundice; hepatic pain with swelling; vomiting in pregnancy secondary to involvement of the liver or spleen.[1976]

- Cardiovascular Conditions: To a lesser extent, the whole venous apparatus is influenced by this herb, strengthening the veins, and preventing *varicosities* and other dilatations. But little effect, however, is observed on the hemorrhoidal circulation.
- Gynecologic Conditions: Amenorrhea secondary to dysfunction of the portal circulation and uterine hemorrhage have been successfully treated by it.
- Hematologic conditions: Hemorrhages associated with splenic or hepatic disorders respond well to Silybum. It influences the tissues supplied by the celiac artery, particularly the distribution of the hepatic and splenic arteries. Congestive conditions of the splenic circulation are those most benefited by it. It controls splenic pain even where no enlargement can be detected, and it is the remedy for hypertrophy of the spleen when non-malarial in character.
- Hepatobiliary Conditions: Congestion of the liver, spleen and kidneys is relieved by its use.

Current Medicinal Uses:

- Gastrointestinal Conditions: By improving liver function, Silybum may be useful in the treatment of constipation. [1977]
- Genitourinary Conditions: Silibinin was demonstrated to prevent kidney damage from cisplatin without diminishing the anti-tumor activity in-vitro.[1978]
- Gynecologic Conditions: By promoting the breakdown of estrogen, Silybum may be useful in the treatment of conditions such as endometriosis, fibroids, and PMS.[1979]
- Hepatobiliary Conditions: In patients with chronic viral hepatitis, preliminary double-blind studies have found that milk thistle can produce significant improvement in symptoms such as fatigue, reduced appetite, and abdominal discomfort, and lower liver enzymes.[1980] A 21-day double-blind placebo-controlled study of 57 people with acute viral hepatitis found significant improvements in the group receiving milk thistle.[1981]
  Other studies have shown equivalent results.[1982,1983]

Preliminary evidence suggests that milk thistle might protect against liver toxicity caused by drugs such as acetaminophen, Dilantin (phenytoin), butyrophenones, alcohol, and phenothiazines. [1984, 1985]
Milk thistle alters bile makeup, thereby potentially reducing risk of gallstones. [1986]

Current Research Review:

- **Drug interactions:**
  - **Indinavir:**[1987]
    - Design: Clinical trial
    - Patients: Ten healthy volunteers
    - Therapy: Milk thistle 175 mg (153 g sylimarin) TID x 3 weeks, followed by 4 doses of indinavir, 800 mg q8h ic. Control – 4 doses of indinavir, 800 mg q8h ic prior to and post experiment.
    - Results: The study concluded that milk thistle in commonly administered dosages should not interfere with indinavir therapy in patients infected with the human immunodeficiency virus.
- **Gastroenterology:**
  - **Ulcers:**[1988]
    - Design: Experimental and clinical trial
    - Patients: Patients with ulcer of stomach and duodenal intestine.
    - Therapy: Natursilum from Sylibum marianum
    - Results: Natursilum has growth efficiency of conventional treatment of an ulcer of a stomach and duodenal intestine patients both on end results, and on terms of an adhesion increases.
  - **Biliary lipid composition:**[1989]
    - Design: Experimental and placebo-controlled clinical trial
    - Patients: Clinical trial part: Four patients with gallstone and 15 patients with cholecystectomy
    - Therapy: Sylimarin, 420 mg qd x 30 days
    - Results: Biliary cholesterol concentrations were reduced after Silymarin treatment and the bile saturation index significantly decreased accordingly. Authors concluded that Silibinin-induced reduction of biliary cholesterol concentration both in humans and in rats might be, at least in part, due to a decreased synthesis of liver cholesterol
  - **Liver cirrhosis:**

    Study 1:[1990]
    - Design: Clinical trial.
    - Patients: Patients with active cirrhosis of different etiology.
    - Therapy: Ursodeoxycholic acid and silymarin
    - Results: Both therapies seemed safe and ameliorated the biochemical indices of cytolysis; however, silymarin did not appear to be effective when hepatic dysfunction was associated to hepatitis C infection. The residual functional liver mass, as assessed by quantitative liver function tests, was not affected by either cytoprotective agent.

    Study 2:[1991]
    - Design: Randomized double-blind placebo-controlled clinical trial
    - Patients: Sixty patients with alcoholic liver cirrhosis.
    - Therapy: Silymarin MZ-80, 150 mg TID x 6 month
    - Results: Silymarin is well-tolerated and produces a small increase in glutathione and a decrease in lipid peroxidation in peripheral blood cells in patients with alcoholic liver cirrhosis. Despite these effects, no changes in routine liver tests were observed during the course of therapy.

    Study 3:[1992]
    - Design: Clinical trial
    - Patients: Twenty-seven patients with primary biliary cirrhosis who had shown a suboptimal response to ursodeoxycholic acid (UDCA) and a persistent elevation of alkaline phosphatase activity at least 2x the upper limit of normal for more than 6 months.
    - Therapy: Sylimarin, 140 mg TID po x 1 yr, was given in addition to UDCA
    - Results: No significant changes in serum alkaline phosphatase activity, total bilirubin, aspartate transaminase (AST), albumin, or Mayo risk score were noted after 1 year of treatment with combination therapy. In conclusion, although silymarin was well tolerated, this medication did not provide benefit to patients with PBC responding suboptimally to UDCA.

    Study 4:[1993]
    - Design: Prospective randomized double-blind placebo-controlled clinical trial
    - Patients: One hundred seventy patients with cirrhosis, including alcoholic, non-alcoholic, males, females, and children.
    - Therapy: 140 mg sylimarin TID x 2 yrs

- Results: In the placebo group, 37 (+2 drop outs) patients had died, and in 31 of these, death was related to liver disease. In the treatment group, 24 (+4 drop outs) had died, and in 18 of these, death was related to liver disease. The 4-year survival rate was 58 +/- 9% (S.E.) in silymarin-treated patients and 39 +/- 9% in the placebo group. Analysis of subgroups indicated that treatment was effective in patients with alcoholic cirrhosis and in patients initially rated "Child A"

Study 5:[1994]

- Design: Randomized double-blind placebo-controlled multicenter clinical trial
- Patients: Two hundred alcoholic patients with histologically or laparoscopically proven liver cirrhosis.
- Therapy: Sylimarin, 450 mg qd (150 mg TID) in a 2-year study.
- Results: Survival was similar in patients receiving silymarin or placebo. The effect of silymarin on survival was not influenced by sex, persistence of alcohol intake, severity of liver dysfunction or by the presence of alcoholic hepatitis in the liver biopsy. Silymarin did not have any significant effect on the course of the disease.

Study 6:[1995]

- Design: Randomized double-blind controlled clinical trial
- Patients: Patients with alcoholic cirrhosis
- Therapy: Silymarin
- Results: Significantly higher surviving rate in experimental group.

Study 7: [1996]

- Design: Open controlled clinical trial
- Patients: Sixty insulin-treated diabetic patients with alcoholic cirrhosis.
- Therapy: Silymarin, 600 mg qd + standard therapy x 12 months, or standard therapy alone - control
- Results: There was a significant decrease in fasting blood glucose levels, mean daily blood glucose levels, daily glucosuria and HbA1c levels already after 4 months of treatment in the silymarin group. In addition, there was a significant decrease in fasting insulin levels and mean exogenous insulin requirements in the treated group, while the untreated group showed a significant increase in fasting insulin levels and a stabilized insulin need. These findings are consistent with the significant decrease in basal and glucagon-stimulated C-peptide levels in the treated group and the significant increase in both parameters in the control group. There also was the significant decrease in malondialdehyde/levels observed in the treated group. The conclusion was that treatment with silymarin may reduce the lipoperoxidation of cell membranes and insulin resistance, significantly decreasing endogenous insulin overproduction and the need for exogenous insulin administration.

- **Alcoholic liver disease:**

Study 1:[1997]

- Design: Randomized placebo-controlled clinical trial
- Patients: Seventy-two patients with alcoholic liver disease
- Therapy: Silymarin, 280 mg qd
- Results: Life table analysis did not show significant differences in mortality between experimental and placebo groups. Final laboratory values and their changes in those who survived did not differ between Silymarin and placebo. Those who abstained from alcohol had a significant fall in gamma glutamyl transferase during follow up. It is concluded that in this trial that Silymarin did not change the evolution or mortality of alcoholic liver disease.

Study 2:[1998]

- Design: Double-blind placebo-controlled clinical trial
- Patients: Patients with chronic alcoholic liver disease
- Therapy: Silymarin, 420 mg qd x 6 months
- Results: The originally low SOD activity of erythrocytes and lymphocytes and SOD expression on lymphocytes was significantly enhanced. In addition, silymarin therapy markedly increased the serum level of ree--SH groups and the activity of glutathione peroxidase. These data indirectly suggest that antioxidant, antiperoxidative effects might be important factors in the mechanism of hepatoprotective action of silymarin.

Study 3:[1999]

- Design: Randomized double-blind placebo-controlled clinical trial.
- Patients: One hundred sixteen patients with histologically proven alcoholic hepatitis, 58 of them with cirrhosis.
- Therapy: Sylimarin, 420 mg qd x 3 months.
- Results: Four patients died of hepatic failure during the trial, 3 in the placebo group. Significant improvement in the score of alcoholic hepatitis and serum amino transferase activity, was noted in both groups during the trial, irrespective of treatment with silymarin or placebo. The conclusion was that silymarin 420 mg/d is not clinically relevant in the treatment of moderate alcoholic hepatitis.

- **Liver diseases:**

- Study 1: [2000]

- Design: Randomized placebo-controlled clinical trial.
- Patients: One hundred and six patients with liver disease with elevated serum transaminase levels. In general, the series represented a relatively slight acute and subacute liver disease, mostly induced by alcohol abuse.
- Therapy: Silymarin x 4 weeks.
- Results: There was a statistically highly significantly greater decrease of S-SGPT (S-ALAT) and S-SGOT (S-ASAT) in the treated group than in controls. Serum total and conjugated bilirubin decreased more in the treated than in controls, but the differences were not statistically significant. BSP retention returned to normal significantly more often in the treated group. The mean percentage decrease of BSP was also markedly higher in the treated. Normalization of histological changes occurred significantly more often in the treated than in controls.

Study 2:[2001]

- Design:
- Patients: One hundred eighty patients with chronic persistent hepatitis (CPH), chronic active hepatitis (CAH), and hepatic cirrhosis (HC).
- Therapy: Romanian product Silimarina (synonym Legalon) x 40 days
- Results: The results showed favourable effects similar with those obtained with other preparations produced by foreign drug industries

Study 3: [2002]

- Design: Two double-blind placebo-controlled clinical trials
- Patients: Study 1: twenty-four patients with chronic hepatitis. Study 2: Twelve patients with chronic hepatitis.
- Therapy: Silymarin, x 3mo-1 yr
- Results: In the laboratory tests investigated no remarkable difference between silymarine and placebo therapy was seen. Some histological changes, however, were improved under silymarine, one of them significantly.

- **Dentistry:**
  - **Dental surgery:[2003]**
    - Design:
    - Patients: Patients undergoing implantation of titanium implants
    - Therapy: Natursilum in surgery and in post-operative period
    - Results: Optimization of an implant osteointegration and normalized physicochemical and metabolic parameters of the oral liquid.
- **Infectious disease:**
  - **Chronic hepatitis:**
    - Study 1: [2004]
    - Design: Randomized placebo-controlled clinical trial
    - Patients: Twenty patients with chronic active hepatitis
    - Therapy: Sylibin complex (IdB1016); 240 mg of sylibin TID
    - Results: There was a statistically significant reduction of mean serum concentrations of aspartate aminotransferase (AST) from 88.0 (+/- 13.3) to 65.9 (+/- 7.5) u/l, of alanine aminotransferase (ALT) from 115.9 (+/- 12.9) to 82.5 (+/- 10.6) u/l, of gamma-glutamyltranspeptidase (gamma-GT) from 51.4 (+/- 9.3) to 41.3 (+/- 4.2) u/l, and of total bilirubin (TB) from 0.76 (+/- 0.08) to 0.53 (+/- 0.04) mg/dl. Alkaline phosphatase (AP) fell slightly from 143.4 (+/- 6.4) to 137.5 (+/- 7.8) u/l. There were no significant changes in MDA, Cu or Zn serum concentrations. These results show that IdB1016 may improve LFTs related to hepatocellular necrosis and/or increases membrane permeability in patients affected by CAH.
  - **Hepatitis B:**
    - Study 1: [2005]
    - Design: Clinical trial
    - Patients: Forty patients with acute hepatitis B.
    - Therapy: Misoprostol or sylimarin x 12 months.
    - Results: At the end of treatment phase, improvement of liver function was faster in misoprostol-treated group. After 12 months of follow-up HBsAg was cleared in all misoprostol-treated patients and in 85% among sylimarin group. Misoprostol treatment resulted with normalization of bilirubin concentration and enzymes activity in all patients. Two among sylimarin treated patients (both HBsAg positive), had transaminases activities elevated over 100 U/l, that resulted with significantly higher values than in misoprostol treated group.

    Study 2:[2006]

    - Design: Controlled clinical trial
    - Patients: One hundred fifty one patients with acute viral hepatitis B.
    - Therapy: Silymarin (Legalon)

- Results: The frequency of nearly normalized values of transaminases and serum bilirubin after 10, 20 and 30 days was not higher in the group treated with Silymarin as compared to the controls. It was concluded that Silymarin has no favourable effects on the cause of acute viral hepatitis.

- **Cognitive disorders:**
  - **Alzheimer's disease:**[2007]
    - Design: Randomized double-blind placebo-controlled multi-center clinical trial
    - Patients: Two hundred twenty two patients with mild to moderated dementia of Alzheimer type.
    - Therapy: Silymarin, 420 mg qd x 1 week + tacrine, 40 mg qd x 6 wks, then tacrine, 80 mg qd x 6 weeks or tacrine + placebo.
    - Results: Silymarin does not prevent tacrine-induced ALT elevation but does reduce the rate of gastrointestinal and cholinergic side effects without any impact on cognitive status. As a consequence, silymarin (420 mg/day) could be co-administered with tacrine to improve tolerability in the initial phases of AD treatment.
- **Cardiology:**
  - **Hyperlipidemia:**[2008]
    - Design: Open clinical trial
    - Patients: Fourteen patients with type II hyperlipidemia
    - Therapy: Silymarin (Legalon), 420 mg qd x 3 months, then placebo x 2 months, then Legalon, 420 mg qd x 1 months.
    - Results: There were no remarkable changes except that the total cholesterol and HDL-cholesterol levels slightly decreased. At the 12th week, in all cases, the apolipoprotein levels were somewhat decreased compared to the baseline values. By the significant decrease of both apo A-I and A-II values, a decrease of the total structural protein amount of HDL, and thus a relative increase in the proportion of cholesterol in HDL fraction was suggested. There were minor changes in serum protein concentration and liver function tests, but all values remained within the normal range. All of the renal function parameters remained unchanged during both treatments and the placebo periods.
- **Toxicology:**
  - **Occupational exposure:**

    Study 1:[2009]
    - Design: controlled clinical trial
    - Patients: Forty nine workers exposed to toluene and/or xylene vapours for 5-20 years with abnormal liver function tests (elevated AST and ALT) and/or abnormal hematological values (low platelet count, leukocytosis, relative lymphocytosis)
    - Therapy: Legalon, TID x 30 days.
    - Results: Under the influence of Legalon the liver function tests and the platelet counts significantly improved. The leukocytosis and relative lymphocytosis showed a nonsignificant tendency of improvement.

    Study 2:[2010]
    - Design: Controlled clinical trial
    - Patients: Fifty-five patients with occupational toxic chronic or subacute hepatopathy caused by various toxic substances, mostly solvents, paints, and glues.
    - Therapy: Sylimarin, 420 mg qd
    - Results: The treatment with Silymarin has shown slight variations in some parameters. The therapeutic effect is probably not dependent upon the kind of pathogen noxa; it seems instead to be more evident when the exposure period is shorter. The group "placebo" does not show significant variations.
- **Pharmacokinetics:**
  - **Bioavailability:**

    Study 1:[2011]
    - Design: Open single dose two-way randomized cross-over clinical trial
    - Patients: Twelve healthy subjects
    - Therapy: 80 mg of silybin in a 1:2 complex with phosphatidylcholine, soft capsule or hard capsule
    - Results: Silybin was more bioavailable from soft gelatin capsule than from hard capsule.

    Study 2:[2012]
    - Design: Randomized controlled clinical trial
    - Patients: Nine healthy volunteers.
    - Therapy: 1) IdB 1016 (complex of silybin and phosphatidylcholine), 350 mg silybin x 1 dose or pure silymarin (equivalent to 360 mg silybin). 2) IdB 1016, 120 mg BID x 8 days
    - Results: The bioavailability of IdB 1016 was much greater than that of silymarin. The plasma silybin level profiles and kinetic parameters on day 1 were similar to those determined on day 8. Most of the silybin present in the systemic circulation was in

conjugated form. It is concluded that complexation with phosphatidylcholine in IdB 1016 greatly increases the oral bioavailability of silybin, probably by facilitating its passage across the gastrointestinal mucosa.

Pharmacy:

Contraindications: No contraindications are present in the literature.

Toxicity: No toxicities are reported in the literature.

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Smilax officinalis

Liliaceae

Common name: Sarsaparilla

Botanical description: The plant produces numerous roots, approximately 3 m long which are attached to a short rhizome. The roots are narrow, very long, and cylindrical. The root is harvested and dried in the sun. The dried root is then cut and tied into bundles. The root is grey to yellow or reddish-brown with ridges, furrows and scars possibly present. Occasionally the thicker rhizome is also harvested. The plant is native to tropical America and the West Indies. The roots may be harvested throughout the year.

Parts used: Roots, rhizome

Constituents: Steroidal saponins (smilagenin, sarsasapogenin, sarsaparilloside); Glycoside saponins [parillin (sarsaponin), smilasaponin (smilacin)]; B-sitosterol, stigmasterol glycosides; Oxalic acid, Fatty acids, Iodine, Mineral salts, Starch

Medicinal actions: Alterative, antiinflammatory, antipruritic, antiseptic

Pharmacology:
Parillin has antibiotic activity.[2013]
The steroid molecules in the root exert steroidal effects in the body. These steroidal compounds are also used in the manufacture of cortisone and other steroids.[2014]

Medicinal use:

Smilax spp. have been used throughout the last three centuries. Its reputation has ranged from granting inner strength and virility to curing syphillis. It has also been used as a flavoring agent in beverages. Current popular use by body builders for its hormonal influence is somewhat unfounded. Smilax does contain steroidal molecules, some of which may be metabolized into testosterone or act as phyto-testosterone, however there is no evidence to suggest that the plant contains testosterone or progesterone.

Smilax spp. is a useful alterative. It has been used historically to heal chronic skin conditions such as psoriasis and other scaling skin diseases. It has also been used to relieve rheumatoid arthritis symptoms. Certain saponins in Smilax binds gut endotoxins thus relieving the toxic load entering the blood. Gut endotoxins have been shown to stimulate cGMP, therefore their decrease would decrease the stimulus for cell division that occurs in psoriasis. In a 1942 clinical study, patients with psoriasis were treated over a two year period with sarsaponin tablets made from sarsaparilla. Improvement was noted in 62% of the cases, although the nature and extent of this improvement is not clear.[2015] Consider combining *Smilax spp.* with *Rumex crispus,* and *Arctium* lappa for the treatment of psoriasis. Smilax *spp.* have been used with reported success in secondary syphilis and leprosy. These conditions are better addressed with modern pharmaceuticals, however Smilax may be a useful adjuvant.

Pharmacy: 1-2 tsp. /cut water; decoct; 1 cup TID
1:5 tincture: 1-2 ml TID

Toxicity: Long-term use may cause ulceration of the gastrointestinal mucosa.

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[2014] Evans WC, *Ibid*, 300.
[2015] Thurmon FM *New Engl J Med*, 227(4), 1942:128.

Spilanthes oleracea / S. acmella — Compositae

Common name: Para cress

Habitat: The Spilanthes genus is a tropical plant. It is considered a weed. S. oleracea is a native of South America.

Botanical description: It has opposite leaves and terminal, stalked flower-heads. It is a small erect herb, of rapid growth with cordate stalked leaves. The flowers are small, yellow and solitary on terminal peduncles. It is consumed as a salad (para cress). S. acmella is an E. Indian species with properties similar to S. oleracea.

Part used:

Constituents: Volatile oil, Acrid resin, Tannin, Alkaloid(s)

Medicinal actions: Sialogogue, Immunostimulant, Antimicrobial, Bitter, Anti-inflammatory

Traditional Medicinal Use:
Although not used in this country at the time, King described Spilanthes and considered its use for flatulence, to improve the appetite and digestive functions, and to overcome nausea and vomiting. It may also be used in deficient salivary secretion and in inflammations of the mouth and throat by using very small doses of a strong extract. The natives of the countries to which it is indigenous, are stated to have employed in gouty and rheumatic affections, in uric acid gravel, in edema, and as a vermifuge.

Current Medicinal use: Spilanthes is an under-investigated herb that is not commonly used. However, for those practitioners who do use Spilanthes, their loyalty to this plant is great.

- Gastrointestinal Conditions: Spilanthes is a sialagogue and also stimulates the release of digestive secretions from the stomach, pancreas and intestines. At the same time, Spilanthes will decrease inflammations of the mucosa of the digestive tract, especially in the mouth and throat.
- Infectious Conditions: Spilanthes is currently employed by some herbal practitioners as a antimicrobial and immunostimulant. Spilanthes is a very effective addition to formulas containing Echinacea, as these plants seem to share some of the same medicinal properties. Spilanthes also appears to have anti-fungal and anti-parasitic properties and combines well with other anti-fungal plants such as Usnea barbata, Hyssopus officinalis, and other plants with a high content of anti-fungal volatile oils.

Current Research Review:

- Search of Medline revealed no human trials as of 11/20/02.

Pharmacy: 1:5 tincture: up to 5 ml TID

Contraindications: No information is available from the selected resources.

Toxicity: No information is available from the selected resources.

Stachys officinalis / S. betonica — Labiatae

Common name: Betony, Wood betony

Habitat: Stachys is native to Europe and prefers open woods, hedgebanks, and grass lands.

Botanical description: Basal leaves up to 7 cm long, ovate or oblong, obtuse, cordate at the base, coarsely crenate. Stems are upright and hairy, bearing smaller leaves, 2-3 pairs. Flowers bright reddish-purple, in tight oblong spikes, the tube longer than the calyx.

Part used:

Constituents [2016]

- Alkaloids: stachydrine, betonicine
- Iridoide monoterpenes
- Betaines: (-)- and (+)-stachydrine flavonoids: including, among others, palustrin
- Choline, Tannins, Volatile oil

Medicinal actions: Sedative, skeletal muscle relaxant, bitter, aromatic, astringent

Traditional Medicinal Use:
The historical use of Stachys was as a panacea of all afflictions of the head including hysteria, headaches, protection form fearful visions and nightmares. Stachys gently tonifies and strengthens the nervous system while exerting its overall relaxing effect.

Current Medicinal Use:

- **Cardiovascular Conditions:** Stachys combines well with Scutellaria for the treatment of nervous headaches and with other hypotensives for the treatment of headache secondary to hypertension.
- **Hepatobiliary Conditions:** In 49 patients with obstructive jaundice who underwent surgery because they were unresponsive to conventional detoxification therapy, a Stachydrene preparation was given. Stachyrene was administered before and after the operation. Under the influence of the preparation, a more rapid normalization of the indices of homeostasis occurred. The most pronounced effect was noted in patients with benign obstructive jaundice. [2017]
- **Musculoskeletal Conditions:** Stachys relaxes skeletal muscle and has a tropism for the muscles of the upper back, shoulders, and neck. It is useful in the treatment of headaches secondary to muscle tension and/or hypertension that is worsened by anxiety. A related set of indications is nervous debility associated with anxiety and tension. Stachys has astringent and alterative actions, giving it usefulness in treating rheumatism and toxic conditions.

Current Research Review:

- Search of Medline revealed no human studies as of October 2002.

Pharmacy:

ContraindicationsToxicity: Fresh leaves are intoxicating.

Stevia rebaudiana

Compositae

Common name: Stevia

Habitat:

Parts used: leaves

Constituents: Stevioside (ent-kaurane glycoside)

Pharmacology:
Various glycosides, particularly stevioside, give Stevia its sweetness. Stevoside is somewhere between 100 and 200 times sweeter than sugar. Early reports suggested that Stevia might reduce blood sugar (and therefore potentially help with diabetes),[2018] although not all reports have confirmed this.[2019] Even if Stevia did not have direct anti-diabetic effects, its use as a sweetener could reduce intake of sugars in such patients. Other studies have shown Stevia to dilate blood vessels in animals, which might reduce high blood pressure.[2020] The amounts used were higher than those used for sweetening purposes, and this effect has not been proven in humans.

Medicinal actions: Sweetener, hypoglycemic

Traditional Medicinal Use: Stevia has only recently entered the western material medica and was not described by the classical western herbalists such as Cook or King.

Current Medicinal Use: There is very little known from modern research about the medicinal properties of Stevia. The plant is native to NE Paraguay. The stevioside and other related glycosides are sweet, in fact they are 300 times as sweet as sucrose.[2021] The plant is now exported to Brazil and Japan and other countries to be used as a sweetener in soft drinks and foods.

The South American folk uses of the plant include its use as a sweetener. In addition, Stevia has historically been used to lower blood sugar. There is some anecdotal evidence to suggest that it has the capacity to regenerate the B-cells of the pancreas and thus may be extremely therapeutic in type I diabetics. Stevia is also used externally as a poultice to decrease inflammations and to hasten the healing of cuts and wounds.

Pharmacy: Use powder as a sugar substitute. Stevia extract mixed with maltodextrin is available as a sugar substitute.
1 tsp. herba/cup water; drink 1 cup BID to TID

Drug Interactions: No information is currently available from the selected resources.

Contraindications: No information is currently available from the selected resources.

Toxicity: No information is currently available from the selected resources.

[2018] Curi R, Alvarez M, Bazotte RB, et al. Effect of *Stevia rebaudiana* on glucose tolerance in normal adult humans. *Braz J Med Biol Res* 1986;19(6):771–4

[2019] White JR Jr, Kramer J, Campbell RK, Bernstein R. Oral use of a topical preparation containing an extract of *Stevia rebaudiana* and the chrysanthemum flower in the management of hyperglycemia. *Diabetes Care* 1994;17:940.

[2020] Melis MS. A crude extract of *Stevia rebaudiana* increases the renal plasma flow of normal and hypertensive rats. *Braz J Med Biol Res* 1996;29(5):669–75.

[2021] Evans WC, *Ibid*, 460.

Stillingia sylvatica — Euphorbiaceae

Common name: Queen's Delight

Habitat: This plant is native to the Southern United States.

Botanical description: A perennial plant that grows to a height of 4 feet. The glabrous stem offers sessile, leathery leaves. Yellow flowers in a terminal spike bloom April through July. A milky sap exudes from any broken part of the plant. The root is tapering, tough, and fibrous. It is gray-brown externally and pinkish internally.

Historical uses: This herb has been in use by medical doctors in the United States from the early 1800's. It was primarily employed as a remedy in the auxiliary treatment of primary and secondary syphilis.

Parts used: Root. (King stressed the use of fresh plant material.)

Constituents: diterpene esters of daphnane and tigliane type, fixed oil, volatile oil, resins

Pharmacology: No information is currently available

Medicinal Actions: Alterative, laxative, diuretic, tonic

Traditional Medicinal Use:

Specific Indications and Uses: King indicated use in: feeble tissues, with tardy removal of broken-down material, and slow renewal of the parts; mucous membranes, tumid, red, and glistening, with scanty secretion; skin affections, with irritation and moist discharge; laryngeal irritation, with paroxysmal, hoarse, croupous cough; irritation of the superior pharynx just behind the fauces, with cough; winter-cough of irritation; periosteal pain and tendency to form nodes; an important remedy in struma and syphilitic affections.[2022] To this Ellingwood added: blood dyscrasia with general enfeeblement.[2023]

Stillingia was a very important remedy. By improving the lymphatic function, it was used to aid in "good blood-making and nutrition". Its alterative action was employed to exert an influence over the secretory and lymphatic functions and circulation in general. It was considered unsurpassed by few, if any other of the known alteratives. Stillingia was extensively used in all the various forms of primary and secondary syphilitic affections, in scrofulous, hepatic and cutaneous affections, mercurial cachexy, strumous diseases, and chronic inflammations.[2024] Ellingwood stated its general use in cancerous diathesis as well. Cook described it as an acrid stimulant, with a fair portion of relaxant influence acting with much persistency.

- PulmonaryConditions: Stillingia was found to be very beneficial in chronic laryngeal and bronchial affections. Small pieces were chewed for laryngitis and bronchitis. In fact Stillingia was considered one of the most important of laryngeal remedies, not only relieving irritation, but proving beneficial in irritative disorders of the oropharynx, trachea, and bronchi. Therefore, it was used as an important cough remedy, particularly for chronic cough where there is a sensation of tightness around the chest or where a cough is hoarse and corupal without secretion.
- Musculoskeletal Conditions: This remedy exerts some influence upon the periosteal structures and is applicable to the periosteal pains in old cases of syphilis with tendency to periosteal destruction and the formation of nodes and exostoses, as of the tibia, head, and face. It is likewise said to favorably influence the persistent pains of chronic periosteal rheumatism.

Current Medicinal Use:

Stillingia root is a stimulating alterative. The root is slowly stimulating to glandular secretions, catharsis, and to general circulation.

- Dermatological Conditions: It is indicated in chronic skin conditions with hepatic insufficiency as a part of the etiology and with glistening red mucosal membranes with scanty secretions also evident.
- Gastrointestinal Conditions: Stillingia tends to be irritating to some stomachs causing emesis and is therefore best indicated in persons without excessive stomach sensitivity.
- PulmonaryConditions: Stillingia root also speeds the healing time of bronchitis and laryngitis. It is useful in these chronic coughs with tightness in the chest via its lubricating effect (resins) and hence reduction in the irritation of the bronchi and larynx.
- Topical Applications: Externally, Stillingia liniment is used to cause stimulation followed by relaxation. It can be applied over a sore throat, the chest in bronchitis and spasmodic asthma, and inflamed, rheumatic joints.

Current Research Review:

- Search of Medline revealed no human trials as of November 2002.

Pharmacy: The fresh root, or at least less than one year old must be used.
1:5 tincture 2-4 ml TID; 80 ml/week max. dose

1:1 fluid extract 10-30 drops TID

Contraindications: In large doses, Stillingia can cause vomiting and purgation, producing a peculiar, disagreeable burning sensation in the alimentary canal, accompanied with prostration. Brinker recommends avoiding Stillingia while nursing.[2025]

Toxicity: The juice of the green root causes inflammation of the skin and swelling.[2026] Gastroenteritis with severe burning, heavy bile-filled, loose diarrhea, vomiting, tachycardia and muscular weakness, and prostration.

[2022] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.

[2023] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 376

[2024] Felter

[2025] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 183

[2026] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001.

Strophanthus

heart failure with edema
do not use in an aqueous medicine as it precipitates. Rather, use tincture straignt or mixed in yogurt

Sig 3-8 gtt up to qid, mother tincture (1:10)

Symphytum officinalis — Boraginaceae

Common name: Comfrey
Habitat:
Botanical description: Perennial root that is large, fiberous, and fleshy. The roots are spindle shaped, about 1-3 in. in diameter and up to a foot long. The leaves are broadly lanceolate, ranging from 8-20 in. long and arising from a basal rosette. The whole plant is dark green and covered with prickly hairs. The flowers are racemes, which uncurl like a scorpion's tail. The corolla is bell-shaped and blue to pink in color.

Part Used: Radix , Leaves

Historical Use: Symphytum has been used medicinally since 400 B.C. Symphytum is the Greek word for coming together. The early Greeks used Comfrey to stop heavy bleeding and treat bronchial symptoms. In the first century, Greek physician, Dioscorides used the leaves and roots of Symphytum to heal wounds and mend broken bones.

Constituents: Mucilage (esp. root), gums, allantoin (esp. in root), tannins, pyrrolizidine alkaloids (higher in root), resins, starch and sugars, chlorophyll (higher in leaves, calcium, potassium, phosphorus, trace minerals, vitamins A and C.

Pharmacology:

Allantoin stimulates cell proliferation and other constituents in Symphytum encourages proper connective tissue matrix formation. Allantoin catalyzes the growth of leukocytes which adds to its wound healing properties by preventing skin infection. The alkaloids are not absorbed through the skin, thus reducing concern over its toxicity.

A water extract of comfrey has been shown to stimulate production of prostaglandins in the stomachs of experimental animals. This may partially explain the historical use of comfrey to help heal ulcers.[2027]

Medicinal actions: Antihemorrhagic, anti-inflammatory, astringent, anti-rheumatic, cell-proliferant, vulnerary, demulcent

Traditional Medicinal Use:

King asserted that all mucilaginous agents exert an influence on mucous tissues, hence the cure, by their internal use, of many pulmonary and other affections in which these tissues have been chiefly implicated. However, he cautioned that physicians must not expect a serious disease to yield to remedies which act on mucous membranes only; and to determine the true value of a medicinal agent, they must first ascertain the true character of the affection, as well is of the tissues involved.[2028] Cook supported this observation stating that Symphytum was rarely used alone, but made a good soothing addition to more tonic agents.[2029]

- **Gastrointestinal Conditions:** Comfrey root is very useful in diarrhoea and sub-acute dysentery.
- **Gynecologic Conditions:** Comfrey root is very useful in leucorrhoea, and female debility, these being principally raucous affections.
- Hematological Conditions: Symphytum was considered of some value in passive hemorrhages from the bowels, kidneys, or womb.
- **Pulmonary Condtions**: Comfrey root is very useful in bronchial irritation, coughs, hemoptysis and other pulmonary affections.
- **Topical Applications**: Externally, the fresh root, bruised, forms an excellent application to bruises, ruptures, fresh wounds, sore breasts, ulcers, white swellings, etc.

Current Medicinal Use:

The mucilage content of Symphytum is almost as high as it is in Althea, making Symphytum a supreme demulcent.

- **Autoimmune Conditions:** As an anti-inflammatory comfrey may be helpful in arthritic, skin and other chronic inflammatory conditions.[2030]
- **Gastrointestinal Conditions:** Internal use of Symphytum is indicated in the treatment of diarrhea and dysentery, shallow G.I. ulcers. These conditions respond to the demulcent, vulnerary, astringent, antihemorrhagic, and anti-inflammatory properties of the plant. The demulcent quality combined with allantoin (cell-proliferant) make Symphytum extremely well indicated in all types of ulcers and inflammation. Symphytum has potent healing effects on the gut wall (used short term) and the tannins also help astringe, thus it may be utilized in leaky gut syndrome. The astringent action of Symphytum also reduces hemorrhage associated with ulcers and colitis. Symphytum combines well with Althea, Geranium, Ulmus and Filpendula for these conditions.
- **Gynecologic Conditions:** Vaginal leukorrhea and cystitis are good indications for the use of Symphytum, again for the astringent, vulnerary, demulcent properties.
- **Musculoskeletal Conditions:** Finally, the healing time and quality of bone fractures, bruises, injuries of tendons and ligaments are much improved with the internal use of Symphytum. (Consider also using homeopathic Symphytum) Applying Symphytum over injured ligaments and bones will also decrease healing time.

- **Pulmonary Conditions:** Bronchial irritation and irritated coughs with hemoptysis respond well to Symphytum. It is a soothing demulcent expectorant. For respiratory conditions, Symphytum combines well with Tussilago, Marrubium, Inula, and Verbascum.
- **Topical Applications**: External use of Symphytum is well indicated for a variety of conditions. Topical ulcers, especially hard to heal diabetic leg ulcers, respond amazingly well to a topical application of Symphytum powdered root mixed with hot water to make a fomentation or with oil. Ground up fresh root can also be used as a poultice. Bruised fresh leaves can be applied to the skin, covered with cloth and left on for several hours. Bruises, ruptures, fresh wounds, sore breasts secondary to bruising, and cracked nipples all heal more efficiently with the application of Symphytum. For hemorrhoids Symphytum can be applied topically for the astringent and vulnerary properties.

Current Research Review

- **Locomotor Disturbances:** One hundred five patients with locomotor system symptoms were treatecd with an ointment containing a Symphytum active substance complex BID in an open, uncontrolled study. A clear therapeutic effect was noted on chronic and subacute symptoms that were accompanied mainly by functional disturbances and pain in the musculature. The preparation was most effective against muscle pain, swelling and overstrain, arthralgia/distortions, enthesopathy, and vertebral syndrome. Activity was weaker against degenerative conditions, for which the ointment may have an adjuvant role with the aim of improving muscular dysfunction and alleviating pain.[2031]
- **Inflammatory Disorders:** In Western Europe, comfrey has been applied for inflammatory disorders such as arthritis, thrombophlebitis and gout and as a treatment for diarrhoea. Only recently was the use of comfrey leaves recognized as a substantial health hazard with hepatic toxicity in humans and carcinogenic potential in rodents. These effects are most likely due to various hepatotoxic pyrrolizidine alkaloids such as lasiocarpine and symphytine, and their related N-oxides. The mechanisms by which toxicity and mutagenicity are conveyed are still not fully understood, but seem to be mediated through a toxic mechanism related to the biotransformation of alkaloids by hepatic microsomal enzymes. This produces highly reactive pyrroles which act as powerful alkylating agents. The main liver injury caused by comfrey (Symphytum officinale) is veno-occlusive disease, a non-thrombotic obliteration of small hepatic veins leading to cirrhosis and eventually liver failure. Patients may present with either acute or chronic clinical signs with portal hypertension, hepatomegaly and abdominal pain as the main features.[2032]

Pharmacy:

- Tincture: 1:5 25% alcohol; sig 2-4 ml TID[2033]
- Fluid extract : 1:1 25% alcohol; sig 1-3 ml TID[2034]
- Topical: Ointment, Cream, Lotion, Fomentation, Compresses, Poultices, Washes, Baths

Contraindications/Toxicity: Do not use Symphytum on deep wounds, as it may cause healing of the superficial tissue without healing the underlying tissue leaving open the possibility of necrosis.[2035] Brinker contraindicates internal use and use on broken skin due to the pyrrolizidine alkaloid content.[2036] Obviously, Symphytum is contraindicated in pregnant and nursing mothers and any person with a history of liver disease. The current debate about whether to use Symphytum internally is due to concern over the pyrrolizidine alkaloids, specifically the echimidine alkaloid. This alkaloid has been shown to cause veno-occlusive disease of the liver (one documented human case and in rats). Echimidine alkaloid is not found in the root of Symphytum officinalis, but are in S. asperum (Prickly Comfrey). S. officinalis and S. asperum are frequently hybridized to form S. uplandicum which is found globally. In the U.S. most of the Symphytum is officinalis species, therefore is remains questionable how toxic the alkaloids of this species are. To be most safe, avoid using the young leaves internally and boil the root, throw away the water (the alkaloids are water soluble) and then tincture it.[2037]

[2027] Lininger et al: *Healthnotes: Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001.

[2028] Felter HW, Lloyd JU. *King's American Dispensatory*, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[2029] Cook, WM. *The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy.* Eclectic Medical Publications, Sandy, OR 1985

[2030] Mills S, Bone K. *Principles and Practice of Phytotherapy: Modern Herbal Medicine*. Churchill Livingstone, 2000.

[2031] Kucera M, Kalal J, Polesna Z. Effects of Symphytum ointment on muscular symptoms and functional locomotor disturbances. *Adv Ther* 2000;17(4):204-10

[2032] Stickel F**.** The efficacy and safety of comfrey. *Public Health Nutr.* 2000 Dec;3(4A):501-8.

[2033] Alschuler L, ND

[2034] Alschuler L, ND

[2035] Alschuler L, ND

[2036] Brinker F. *Herb Contraindications and Drug Interactions.* Eclectic Medical Publications, Sandy, OR 1998:63

[2037] Alschuler L, ND

Syzygium cumini / Eugenia jambolana

Myrtaceae

Caryophyllus aromaticus, Eugenia carophyllus, Syzygium aromaticum

Common name: Jambul, Java plum refer to S. cumini whereas clove refers to S. aromaticum

Habitat: Native to India, S. America and W. Africa

Botanical description: Oval seeds, approx. 3 mm diameter, hard and polished, vermilion red with upper third black.

Parts used: Seed and Fruit

Constituents: Phenols, Tannins, essential oil, Jambosine (alkaloid) and Antimellin (glycoside), triterpenes, essential oil

Pharmacology:

An extract of the fruit and seed of S. cumini causes a significant hypoglycemic effect in animals and eliminates glycosuria in rats.[2038]

Methanol extracts of clove inhibit rat intestinal maltase. Eugeniin showed inhibitory activity with an IC50 value of 10(-3) M. Eugeniin also inhibited maltase activity toward a human intestinal epithelial cell line. [2039]

Eugenol, the active principle of clove, was shown to offer protection against CCl4 induced hepatotoxicity in rats. [2040]

Two antiplatelet components, eugenol and acetyl eugenol inhibited arachidonate-, adrenaline- and collagen-induced platelet aggregation. Their inhibitory effect was reversible. These components were antiaggregatory by a combination of at least two effects: (i) inhibition of platelet thromboxane formation, and (ii) increased formation of 12-lipoxygenase products (12-HPETE).[2041]

Medicinal actions: Hypoglycemic, astringent, diuretic, local anesthetic, smooth muscle relaxant, antiseptic, antibacterial, antifungal, antiviral

Traditional Medicinal Use: King described S. aromaticum as aromatic, stimulant, and irritant. It was used to allay vomiting and spasm of the stomach, to stimulate the digestive functions, and to improve the flavor or operation of other remedies, and prevent a tendency to their producing sickness or griping.

Current Medicinal Use:

- Dental Conditions: The antimicrobial action of natural substances from S. aromaticum was investigated in vitro against oral bacteria including Streptococcus sp., Actinomyces sp., Actinobacillus sp., Bacteroides sp., Capnocytophaga sp., Eikenella sp., Fusobacterium sp. and Propionibacterium sp. Among the natural substances tested, hinokitiol was the most inhibitory to oral bacteria. Cinnamon bark oil, papua-mace extracts, and clove bud oil in spice extracts were also inhibitory against many oral bacteria.[2042]
- Endocrine Conditions: Syzygium cumini is a useful herb in lowering blood glucose, especially in diabetics. The herb exerts a powerful effect in this regard and is often the leading herb in formulas intending to reduce blood sugar. When giving this plant to type I diabetics, as with any other glucose-lowering plant, be cautious about taking the patient off of insulin too quickly. Even if the insulin dose can be lowered substantially, it is imperative to monitor the patient for several months after this point to insure that the herb is exerting a consistent and sustainable effect.

In regard to research for the hypoglycemic effects, only negative results have been demonstrated. The postulated antihyperglycemic effect of the S. cumini was tested in three experiments. In the first, a randomized, parallel, placebo controlled trial, tea prepared from leaves of S. cumini did not present any antihyperglycernic effect in 30 non-diabetic young volunteers submitted to a glucose blood tolerance test. In the animal experiments, the effect of the crude extract prepared from leaves of S. cumini was tested for 2 weeks on the post-prandial blood glucose level of normal rats and rats with diabetes mellitus. The treatment did not produce any antihyperglycernic effect in both models. These results do not rule out hypoglycemic effects in patients with type II diabetes mellitus, but strongly suggest that, for a while, the jambolan cannot be recommended as an antihyperglycemic treatment. [2043] However, these studies were performed using leaf rather than seed preparations.

Another study was undertaken to investigate whether a tea prepared from Syzygium cumini, reported to be used by diabetics in Porto Alegre, Brazil, might have an antihyperglycemic effect in experimental models. None of the tea concentrations had any detectable antihyperglycemic effect either in normal or in diabetic rats, suggesting that this plant, prepared in a manner similar to that employed by humans, is destitute of an antihyperglycemic effect. [2044]

- Topical Applications: As an insect repellent, the effect of different concentrations and combinations of five essential oils (Bourbon geranium, cedarwood, clove, peppermint, and thyme) to mosquitoes when applied to human skin was determined. Thyme and clove oils were the most effective mosquito repellents and provided 1 1/2 to 3 1/2 h of protection, depending on oil concentration. Clove oil (50%) combined with geranium oil (50%) or with thyme oil (50%) prevented biting for 1 1/4 to 2 1/2 h. Clove, thyme, and peppermint oils can be irritating to the skin, both human subjects in this study judged the odor of clove and thyme oils unacceptable at concentrations greater than or equal to 25%[2045]

The essential oil has been utilized for topical anesthesia.[2046]

Pharmacy: 0.3-2 gm powdered seed.

Drug Interactions:
S. aromaticum:[2047]

- **Anticoagulants:** may be potentiated due to platelet aggregation inhibiting effects of eugenol and acetyl eugenol (speculated, in vitro)
- **Aminopyrine:** metabolism by hepatic monooxygenase is inhibited (in vitro)

Contraindications: In concentrated form, oil of cloves may be irritating to mucosal tissues.

Toxicity: The potential of eugenol and of clove leaf oil, which contains a high concentration of eugenol, to induce delayed skin hypersensitivity or to elicit reactions due to pre-existing skin sensitization in man was evaluated by analyzing patch-test data. The survey indicates that, at the concentrations present in consumer products, eugenol alone or as part of clove leaf oil has a very low potential either to elicit pre-existing sensitization ('elicited' reactions) or to induce hypersensitivity ('induced' reactions).[2048]

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Bull Tokyo Dent Coll. 1989 Aug;30(3):129-35.

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J Ethnopharmacol. 2000 Jul;71(1-2):343-7.

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[2045] Barnard DR. Repellency of essential oils to mosquitoes (Diptera: Culicidae). *J Med Entomol.* 1999 Sep;36(5):625-9.

[2046] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p.30

[2047] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. P 66-67

[2048] Rothenstein AS. Eugenol and clove leaf oil: a survey of consumer patch-test sensitization.
Food Chem Toxicol. 1983 Dec;21(6):727-33.

Tabebuia avellanedae

Common name: Pau d'arco

Habitat:

Botanical description:

Parts used: bark, heartwood

Constituents: Lapachol and beta-lapachone (known collectively as naphthaquinones) are two primary active compounds in Pau d'arco. Other constituents include anthraquinones and flavonoids including quercetin.

Pharmacology: According to laboratory tests, Pau d'arco has anti-fungal properties as potent or more so than ketaconazole, a common anti-fungal drug. Although these compounds also have anti-cancer properties, the effective amount for this effect is toxic [2049].

Tabebuia interferes w/ electron transport and oxygen uptake of microorganisms.

According to Dr. Murray, Tabebuia is

- Antibacterial against acid fast and Brucella species.
- Antifungal against C. albicans, Trichophyton mentagrophytes
- Antiviral: β-lapachone and -interferes w/ electron transport and O2 uptake of microorganisms, inhibits RNA/DNA polymerase, reverse transcriptase
- Antiparasitic against scistosomes, trypanosomes
- Antineoplastic
- Antiinflammatory: quercetin inhibits mitochondrial electron transport, PDE, cAMP dependent protein kinases, Tyr protein kinases, Ca2+ PL-dependent PK

Drug Interactions:[2050]

- Lapachol has an anticoagulant effect in humans that produces vitamin K antagonism similar to warfarin.
- Tabebuia has been theorized to count the immunosuppressive effects of cyclosporine and corticosteroids, possibly due to the immunomodulating activity of its napthaquinones and possibly other components.

Medicinal actions: antimicrobial, antineoplastic, antiinflammatory

Traditional Medicinal Use: No information is available from the selected resources.

Current Medicinal Use: Human studies are lacking to confirm the efficacy of Pau d'arco. Tabebuia has primarily been used as an antimicrobial, particularly for fungal infections.

Current Research Review:

- Search of Medline revealed no human studies as of October 2002.

Pharmacy:

Dried herb: 5 g, 2-8/day
Standardized extract; 2-4% lapachol- 15-20 g 3-4/day
Wash, soak (can be used by soaking a tampon for vaginal application

Contraindications: Brinker speculates that Tabebuia be avoided during pregnancy due to potential abortifacient and teratogenic effects of lapachol in rats.[2051]

Toxicity: Only occurs with isolated lapachol.

[2049] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[2050] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p.159

[2051] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p159

Tanacetum parthenium

Common name: feverfew, chrysanthemum

Habitat:

Botanical description:

Part used:

Historical use:

Energetics:

Constituents [2052]

- Volatile oil: chief constituents are L-camphor, trans-chrysanthylacetat, including, among others, camphene, p-cymene, linalool, borneol, terpenes-4-ol
- Sesquiterpene lactones
- Flavonoids
- Polyynes

Pharmacology:

It is thought that a significant increase in serotonin from platelets may trigger the chain of events leading to a migraine attack. Feverfew contains a range of compounds known as sesquiterpene lactones. Over 85% is a compound called parthenolide. Parthenolide is antiplatelet and inhibits the release of serotonin and some inflammatory mediators. This may occur via the ability of Tanacetum to interact with the protein kinase C pathway. [2053] Feverfew's parthenolide content was originally thought to account for the anti-migraine action of this herb, but this has been a matter of recent debate. [2054]

Medicinal actions:

Traditional Medicinal Uses:

Cook described this herb as stimulating and moderately relaxing, rather diffusive, leaving a biting tonic-stimulating impression; the warm infusion inducing perspiration.[2055] King described its properties as tonic, carminative, emmenagogue, vermifuge, stimulant. [2056] Whereas King described the cold infusion as a valuable tonic, Cook considered such a preparation too harsh and unpleasant an article for internal use except under necessity.

- Gastrointestinal Conditions**:** King believed this agent to be one of the most pleasant of the tonics, influencing the whole intestinal tract, increasing the appetite, improving digestion, and promoting secretion. The warm infusion was ascribed to be an excellent remedy in flatulency, worms, atonic dyspepsia

The seeds, and flowers when nearly ripe, were reputed to be a good remedy for worms.

- Genitourinary Conditions: Tanacetum was considered to have a decided action upon renal function according to the Eclectics, particularly in regard to suppression of urine.
- Gynecological Conditions: The Physiomedicalists sometimes used Tanacetum to stimulate menstrual function in atonic amenorrhea. Although Cook considered it a rather harsh remedy, he noted that it as a popular agent for all menstrual suppressions, often employed to medicate vapor for baths about the pelvis. The warm infusion was a notable remedy for irregular menstruation.
- Immune Conditions: The warm infusion was used for the acute stage of colds.
- Topical Applications: Tanacetum was added local baths for the treatment of rheumatism, sprains, etc.; as a fomentation for uterine and intestinal rheumatism and in severe pain or swelling of the bowels.

Other indications of the Physiomedicalists included enhancing cutaneous functions, nervous debility, hysteria and in some febrile diseases.

Current Medicinal Uses:

- Pain Conditions: Migraine headache [2057, 2058]: According to three double-blind studies with migraine patients, feverfew reduces the severity, duration, and frequency of migraine headaches. These successful studies employed dried, powdered leaves. One negative study used an alcohol extract indicating the dried leaf preparation is probably superior.[2059,] Studies suggest that a standardized Feverfew extract providing at least 250 mcg of parthenolide per day is most effective. [2060]

Pharmacy:

Contraindications:

Tanacetum is contraindicated in early pregnancy due to its potential emmenagogue effect and may cause contact dermatitis.[2061]

Toxicity:

[2052] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[2053] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 386

[2054] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[2055] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985

[2056] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[2057] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p.385

[2058] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999, p. 976

[2059] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[2060] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999, p. 977

[2061] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 71, 146

Taraxacum officinalis — Asteraceae

Common name: Dandelion

Habitat: North temperate zone in pastures, meadows, lawns. (T. mongolicum is the variety utilized in TCM for distinctly different uses.)

Botanical description: Thick tap root, dark brown on the outside, white on the inside. Leaves in a rosette, close to the ground, shiny without hairs and the margin of each leaf with great jagged teeth ("dent-de-lion" in French, translated into English as dandelion). A yellow flower arises straight up from the root bearing yellow elongated florets.

Parts used: Root, young leaves, (flowers). King stressed use of fresh plant material. According to Dr. Alschuler, the fresh root is best, leaves are beneficial fresh and dried. The root is best harvested in early Fall.

Historical uses: Dandelion has been in medicinal use for centuries, with the first mention of it as medicine in the Arabian medical texts of the 10th and 11th centuries. It has been used for liver complaints and in many forms including as a wine (flowers), coffee-like beverage (roasted roots) and as food (leaves).

Constituents:

- Dandelion is a rich source of vitamins and minerals. The leaves have a high content of beta carotene [the is higher than in carrots; 14,000 iu/ 100 g raw leaves]as well as moderate amounts of vitamin D, vitamin C, various B vitamins, iron, silicon, magnesium, zinc, and manganese.[2062]
- Sesquiterpene lactones (bitter substances): including, taraxinacetyl-1′-O-glucosides, 11,13-dihydrotaraxinacetyl-1′-O-glucosides, taraxacolide-1′-O-glucosides, 4alpha,15,11beta,13-tetrahydroridentin B [2063]
- Triterpenes and sterols: beta-sitosterol, beta-sitosterol-glucosides, taraxasterol, psi-taraxasterol, taraxerol, taraxol [2064], triterpene steroids (sitosterin, stigmasterin, phytosterin)
- Polysaccharides: Inulin
- Flavonoids, mucilage, phenolic acids, protein, sugars, pectin, choline

Pharmacology:

The leaf contains sesquiterpene lactones which are a form of flavonoid. This constituent creates an osmotic diuretic effect. Previously referred to as taraxacin, these constituents are of the eudesmanolide and germacranolide type and are unique to Taraxacum. [2065]

The inulin in the root activates complement, thus contributing to the anti-inflammatory, and immune-enhancing properties of Taraxacum. The bitter compounds in the leaves and root help stimulate digestion and are mild laxatives. These bitter principles also increase bile production and flow. The increase in bile flow may help improve fat (including cholesterol) metabolism in the body. [2066]

Medicinal actions: Leaf: diuretic, choleretic, anti-inflammatory
Root: choleretic, cholagogue, tonic, antirheumatic, bitter, alterative, depurative

Traditional Medicinal Use:

Specific Indications and Uses: Loss of appetite, weak digestion, hepatic torpor, and constipation.[2067]
Taraxacum was reputed as beneficial in edema secondary to lack of action of the abdominal organs, in uterine obstructions, chronic diseases of the skin, and impairment of the digestive functions.[2068] Cook described Taraxacum root as a mild laxative and alterant, having relaxing-tonic grade qualities that slowly and gently influence the liver, small intestines, and kidneys.[2069] Ellingwood affirmed that it encouraged hepatic metabolism as well as the production and elimination of urea and the excretion of uric acid.[2070]

- Dermatological Conditions: Taraxacum was considered by Ellingwood to be the alterative for chronic skin eruptions and skin conditions in general.
- Gastrointestinal Conditions: Taraxacum was used a stomachic and tonic, with slightly diuretic and aperient actions. Apparently, it was reported to relieve apthous ulcerations of the mouth.
- Hepatobiliary Conditions: It has long been used to exert an influence upon the liver and gall bladder, removing torpor and engorgement of the liver as well as of the spleen. According to Ellingwood, Taraxacum was indicated in chronic jaundice attributable to auto-intoxication.

Current Medicinal Use:

The scientific basis for the use of Taraxacum is scanty and most of the work has been done on animals.

Taraxacum is one the best remedies for kidney and liver hypofunction. Taraxacum root is a useful alterative for chronic toxic conditions manifesting as eczema, acne, arthritis, chronic gastritis and enteritis. Overall, Taraxacum is most indicated in mild, chronic hepatic congestion as it exerts a slow, but consistent, gentle action.

- Gastrointestinal Conditions: The bitter in the root, lends it stimulating and tonifying properties for the digestive tract, especially the stomach. The bitter compounds in the leaves and root help stimulate digestion relieve dyspepsia and have a mild laxative effect. [2071, 2072,2073]
- Genitourinary Conditions: The leaves have decisive diuretic action, yet are not over stimulating to the kidneys. Animal studies show, at a doses of 2 grams per kg of body weight), the leaves possess diuretic effects comparable to the prescription diuretic furosemide (Lasix). [2074]The leaves are high in potassium, replacing potassium lost in diuresis, thus exerting a potassium-sparing effect. Taraxacum is best employed for peripheral edema or fluid accumulation associated with joint inflammation (Dandelion is anti-inflammatory). Taraxacum leaf combines well with most other diuretics including Equisteium, Agropyrens, Achillea, Betulina, etc. Tea or fresh juice are the most diuretic, with tincture having a mild lesser effect.
- Hepatobiliary Conditions: : The root is stimulating to the digestive system, most notably the liver. The leaves are mildly stimulating to the liver. Taraxacum is widely regarded as the supreme liver tonic. It exerts cholagogue effects, and thus acts as a mild laxative. It is indicated in any condition of liver and/or gall-bladder inflammation and stasis inc. cholelithiasis, metabolic toxicity, and jaundice.[2075] Another study demonstrated that dandelion extract was able to treat jaundice, hepatitis (unspecified type), and dyspepsia 2^0 to deficient bile secretion. [2076]Taraxacum root increases both the production and the flow of bile (the latter is accomplished by increasing gall-bladder contractility). The triterpenes bear a close structural similarity to cholesterol which may in part explain the ability of Taraxacum root to increase the solubility of bile. The choline may be in large part responsible for the choleretic and cholagogue effects. Thus, in treatment of sluggish liver function due to alcohol abuse or poor diet, the bitter principles increase bile production in the gallbladder and bile flow from the liver. [2077, 2078,2079] For liver congestion, Taraxacum combines well with Chelidonium, Berberis vulgaris, and Rumex crispus.
- Metabolic Conditions: One small study with 12 patients showed a cholesterol lowering effect.[2080]

Current Research Review:

- Search of Medline revealed no human trials as of October 2002.

Pharmacy: Taraxacum combines well with most other herbs.
Root decoction: 2-8 gm/day
Leaf decoction: 4-10 gm/day
Tincture 1:5 of root and/or leaf: sig 3-5 ml TID
Dried herba: 4-10 g TID [1 tsp. = 1.2 g]
Roasted root as a coffee substitute
Dandelion wine made from the flowers and young leaves.
Fresh young leaves make an excellent salad green.
Juice of the pureed leaves; sig up to 20 ml/ day

Contraindications: King and Brinker recommended that It should not be used by those whose digestive organs are weak, as it is apt to cause dyspepsia, flatulence, pain, and diarrhea. [2081, 2082] Also, the presence of irritable conditions of the stomach or bowels, or acute inflammation, contraindicate its use. Brinker further states that Taraxacum be avoided in biliary obstruction or inflammation and he speculates that Taraxacum may enhance lithium toxicity.[2083]
Toxicity: Safe herb

[2062] Ibid
[2063] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001.
[2064] Ibid
[2065] Ibid
[2066] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs, Prima Publishing, Rocklin, CA. 2001.
[2067] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Publications, Sandy, OR 1983 p.
[2068] Felter
[2069] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985 p.
[2070] Ellingwood, F. American Materia Medica, Therapeutic and Pharmacognosy. Ellingwood's Therapeutist, Chicago. 1919 p. 326
[2071] Blumenthal, M., *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, First Edition, American Botanical Council. 1998
[2072] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed.,Churchill Livingstone, New York, NY. 1999, p. 981.
[2073] Blumenthal, M., *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, First Edition, American Botanical Council. 1998
[2074] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed.,Churchill Livingstone, New York, NY. 1999, p. 981.
[2075] Mascolo, N. et al, Phytother. Res., 1(1), 1987:28
[2076] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed.,Churchill Livingstone, New York, NY. 1999, p. 981.
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[2078] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed.,Churchill Livingstone, New York, NY. 1999, p. 981.

[2079] Blumenthal, M., *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines*, First Edition, American Botanical Council. 1998

[2080] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed.,Churchill Livingstone, New York, NY. 1999, p. 981.

[2081] Felter

[2082] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 65

[2083] Brinker, p.66

Thuja occidentalis

Common name: cedar

Habitat:

Botanical description:

Part used: leaf

Historical use:

Energetics:

Constituents: [2084]

- Water-soluble immunostimulating polysaccharides and glycoproteins
- Volatile oil (1.4-4%): chief components (-)-thujone (alpha-thujone, 59%), (+)-isothujone (beta-thujone, 7-10%), fenchone (10-15%)
- Flavonoids: including, among others, quercitrin, mearusitrin, the bioflavonoids hinoki flavone, amentoflavone, bilobetin-procyanidins

Pharmacology:

Seven diterpenoids from the stem bark of Thuja showed strong inhibitory effects on Epstein-Barr virus early antigen activation. Among these compounds, 15,16-bisnor-13-oxolabda-8(17), 11E-dien-19-oic acid was revealed to have the strongest inhibitory effect on the EBV-EA activation, being stronger than that of beta-carotene which has been intensively studied in cancer prevention using animal models.

15,16-bisnor-13-Oxolabda-8(17), 11E-dien-19-oic acid was also found to exhibit the excellent anti-tumor promoting activity in two-stage mouse skin cancer. [2085]

Thuja polysaccharides were shown to be an inducer of the CD4+ cells in human peripheral blood. It was also demonstrated that Thuja is a potent inhibitor of the expression of HIV-1-specific antigens and of the HIV-1-specific reverse transcriptase. Thuja induces IL-1 beta, IL-2, IL-3, IL-6, gamma-IFN, G-CSF, GM-CSF, and TNF-beta production in PBL cultures; and IL-1 beta and IL-6 in monocyte/ macrophage cultures. [2086]

The essential oil causes cramping.

Medical actions: antiseptic, stimulant

Traditional Medicinal Uses:

Specific Indications and Uses: Enlarged prostate, with dribbling of urine in the aged; urine easily expelled upon coughing or slight muscular exertion; vesical, irritation and atony; enuresis of children; verrucous vegetations; trachoma; chancroid.[2087]

Thuja is a remedy for blood changes and glandular disorders. Tissue degeneration in the epithelial structures appears to be influenced by it. It is first stimulant, afterward subastringent

Prof. King stated that a decoction of the leaves had been used in fevers, coughs, rheumatic and scorbutic affections, and gave the usual notice respecting its power to remove warts but will not destroy swiftly growing venereal warts.

- Dermatologic Conditions: Perhaps one of the best known properties ascribed to Thuja is its power to remove warts, whether of the hands, face, or genitals. The Eclectics preferred subcutaneous injection of Thuja around the base of warts. It was also considered of value in some chronic skin affections, showing a tendency to vegetations.
- ENT Conditions: Thuja was also believed valuable as an application to post-nasal catarrh, and to shrink nasal polyps and other growths in the nose and nasopharynx. Locally and internally, it was described to provide excellent results in chronic tonsillar affections and in milder cases of diphtheria.
- Gynecological Conditions: Thuja has been employed in amenorrhea with pelvic atony and in catarrhal diseases of the female organs. The Eclectics have used it as a topical application to thick, spongy, or tender os uteri, with leucorrheal discharge.
- Gastrointestinal Conditions: Rectal troubles, such as fissured anus and hemorrhoids, have been frequently cured with Thuja, including hypodermic injection into piles. In this case, Thuja was used to affect cure by inducing atrophy. In fissured anus, the drug was said to at first aggravates the trouble, but to soon effect a permanent cure.
- Genitourinary Conditions: Thuja was employed for irritability in the bladder and a variety of forms of nocturnal enuresis in children and adults.
- Infectious Conditions: The Eclectics used Thuja as a remedy of choice in the treatment of syphilis, gonorrhea and chancroid.

- Male Conditions: Thuja was well known a specific for the cure of hydrocele by hypodermic injection into the tunica vaginalis testis. Old men with enlarged and greatly irritated prostates inducing a constant dribbling of urine were treated with 5-drop doses of Thuja.
- Ophthalmological Conditions: Thuja preparations were formulated to treat trachoma with reportedly excellent results in chronic cases. Some Eclectic physicians stated that specific Thuja (1/5 to 1/3-drop doses) acts upon the deep ocular tissues, and has been used in scleritis, episcleritis, sclerochoroiditis, and syphilitic iritis, with gummata on the iris; also externally and internally for the removal of tarsal tumors.
- Pulmonary Conditions: The Eclectics have used an inhalation of Thuja in bronchial diseases, chronic catarrhal conditions and hemoptysis. Inhalation was also indicated in the treatment of diphtheria and membranous croup.
- Topical Applications: Thuja came highly recommended as a dressing for sloughing wounds, ulcers, bedsores, gangrene, and carcinomatous ulcerations. It was considered valuable to restrain hemorrhages caused by malignant growths.

Current Medical Uses:

- Pulmonary Conditions: Thuja is used for respiratory tract infections including Strep throat and bronchitis.
- Dermatologic Conditions: In conjunction with antibiotics, Thuja has been used in the treatment of bacterial skin infections and *Herpes Simplex*.
- Topical Applications: The drug is used in external application as an ointment for treating pains in the joints, arthritis and muscle rheumatism. [2088]

Current Research Review:
Search of Medline revealed no human trials as of 11/20/02

Pharmacy:

Contraindications: Brinker contraindicates the use of Thuja in pregnancy due to emmenagogue and abortifacient effects (empirical) and cautions against prolonged use in general due to cumulative toxicity of thujone.[2089]

Toxicity: Brinker cautions against prolonged use in general due to cumulative toxicity of thujone.[2090]

[2084] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[2085] Tanaka, R. Cancer chemopreventive agents, labdane diterpenoids from the stem bark of Thuja standishii (Gord.) Carr. Cancer Lett. 2000 Dec 20;161(2):165-70.

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[2087] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

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[2090] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 190

Thymus vulgaris — Labiatae

Common name: Thymus

Habitat: Thymus is wild and cultivated. It is native to the Mediterranean region and the mountains of Spain and Europe. Thymus is now cultivated throughout the world preferring sandy, dry soil.

Botanical description: A perennial shrub with many branched, square, woody stems growing to a height of 10-16 in. The leaves are opposite, small, linear, with an enrolled margin and a whitish underside. The flowers are two lipped, small white-pink arranged in dense terminal spikes. Flowers May-Oct.. The fruit is a four nut-like acheme.

Part used: Herba

Historical use: The ancient Greeks used Thymus to inspire courage and to as a mark of grace, energy and bravery. The Greeks also used Thymus for its antiseptic properties. In later Europe, Thymus was employed medicinally for coughs and shortness of breath, for sciatic and joint pains, for headaches and poor vision, and as a fragrance in soaps and perfumes.

Constituents: [2091, 2092]

- Volatile oil (1.0-2.5%): inc. terpenes such as thymol (20-55%), carvacrol (1-10%), borneol (up to 8%), cineol, p-cymene (14-45%), linalool (up to 8%)
- Caffeic acid derivatives: rosmarinic acid
- Flavonoids: including, among others, luteolin, apigenin, naringenin, cirsilineol, cirsimaritin, thymonin, partially present as glycosides
- Triterpenes*:* including, among others, ursolic acid (2%), oleanolic acid (0.6%)
- Tannins, Bitters, Resin, Gums

Pharmacology

Many constituents in Thymus work synergistically to provide its anti-tussive, antispasmodic, and expectorant actions. Essential oil of Thymus has a relaxing effect on tracheal smooth muscle. Spasm caused by specific receptor agonists (acetylcholine, histamine, L-noradrenaline) is inhibited by Thymus extract.[2093]

Water extracts of Thymus show an ability to kill *Helicobacter pylori*, a bacteria related to many stomach ulcers, *in vitro*. The antibacterial and the antifungal activity of thymol is well recognized against oral bacteria as well as bacteria involved in upper respiratory infections.[2094]

The Rosmarinic acid in Thymus inhibits lipid peroxidation and quenches free radicals and thymol has been shown to inhibit oxidation of LDL and scavenge hydroxyl radicals.[2095]

Medicinal Actions: Anti-septic, anti-helminthic, anti-viral, anti-bacterial, astringent, expectorant, secretolitic (decreases over-secretions), spasmolytic.

Traditional Medicinal Use:

Cook described Thymus as a pleasant diffusive aromatic, stimulating and relaxant, acting as a carminative and mild emmenagogue. It may be used in recent colds. A warm infusion may be used freely, and gently promotes perspiration; and the action of the plant is similar to that of pennyroyal.[2096]

- Gastrointestinal Conditions: The cold infusion was considered useful in dyspepsia, with weak and irritable stomach, and as a stimulating tonic in convalescence from exhausting diseases. A warm infusion was used for colic, and general flatulence.
- Gynecological Conditions: A warm infusion was used for menstruation obstructed and painful from exposure.
- Topical Applications: Occasionally the leaves have been used externally, in fomentation. The oil was regarded as a valuable local application to neuralgic and rheumatic pains.

Current Medicinal Use: The uses for Thymus fall into the main categories of pulmonary, urinary, G.I., and external uses.

- Gastrointestinal Conditions: For the gastrointestinal system, Thymus is indicated in gastritis, flatulence, and for worms, especially thread- and pinworms. The volatile oils help to reduce G.I. spasm and the bitter compounds enhance digestive functioning. For the treatment of pinworms, Thymus is usually given in a base of castor oil in order to slow down the absorption of thymus (1 part Thymus: 2 parts Castor oil; 1 tsp./day for children). If someone has bronchitis and decreased appetite and concomitant spastic constipation, Thymus would be an excellent remedy.
- Genitourinary Conditions: For the urinary system, Thymus is a diuretic, antiseptic, and spasmolytic. For cystitis, urethritis and as a general urinary antiseptic, thymus as a tea can be quite effective. Two quarts of tea/day and/or a tsp. of tincture every 3 hours until

symptoms improve. Then drink 1 quart each day for 5-7 days after the disappearance of symptoms. Warm infusion of thymus can also relieve dysmenorrhea and abdominal colic.

- Pulmonary Conditions: The pulmonary uses of Thymus are based on its antiseptic and anti-bacterial actions combined with the expectorant and spasmolytic actions.[2097] Thymus is most indicated in dry and/or spastic coughs, although because it is anti-bacterial, it is useful in catarrhal coughs as well. Thymus helps to relax the respiratory muscles while giving a stimulating edge at the same time (v. oils).[2098] Thymus has a relaxing effect systemically. This makes Thymus especially indicated for children who are anxious around their spasms of coughing.
  A double blind randomized controlled trial with 60 patients demonstrated that Thymus syrup was as effective as bromhexine (a mucolytic drug).[2099]
  Thymus combines well with Primula vera (cowslip) and Plantago lanceolata (plantain) or Althea officinalis (marshmallow). For an acute viral URI, Thymus, Sambuccus, and Euphrasia are a good combination. For asthma, Thymus combines well with Tussilago, Ephedra, and Lobelia. The taste is bitter so with glycerol added, kids tolerate the herb better. Alternatively, using Thymus oil in water as an inhalant, or applying the oil to a cotton ball and placing that in humidifiers work well for children.
- Topical Applications: Externally, Thymus can be used as an infusion and mouth wash for sore throats, mouth ulcers, leukoplakia. In addition, thrush. The infusion can also be used as a skin wash. Thymus is anti-fungal and anti-viral topically, but application of the undiluted oil will irritate the skin. Thymus infusion can also be used as a douche in the treatment of Gardnerella vaginitis.

Pharmacy: The German Commission E monograph recommends a cup of tea made from 1–2 grams of the herb taken several times daily PRN for a cough. A fluid extract can be used in the amount of 1–4 ml TID. Another alternative is to use a tincture of Thymus in the amount of 2–6 ml TID.

Infusion: 1-2 tsp./cup water; sig 3-4 cups/day
Tincture: 1:5 45% EtOH; sig 2-5 ml TID
Syrup
Oil
Creams, salves, lotions, douche

Contraindications: Thymus is contraindicated during pregnancy, acute renal or urinary tract inflammation and acute gastrointestinal inflammation.[2100]

Toxicity: (especially of the essential oil)- headache, vomiting, painful diarrhea, tinnitus, kidney failure

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[2091] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[2092] *PDR for Herbal Medicines*. Medical Economics Company Inc., Montvale, NJ. 2001

[2093] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 564.

[2094] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 565.

[2095] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p. 565.

[2096] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985

[2097] Zeylstra, H.H., "Thymus vulgaris", New Herbal Practitioner , 13(1), 1986:9-10

[2098] Van den Brouke, C.O. et al, Pharm. Weekbl. , 5(1), 1983:9

[2099] Mills, S. and Bone, K. *Principles and Practice of Phytotherapy* . Churchhill Livingstone, New York, NY. 2000, p, 566.

[2100] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998.p.129,151, 180

Tilia europea, T. cordata, T. platyphyllos

Tiliacea

Common name: Lime flower, Linden tree

Habitat:

Botanical description: The tree has a smooth bark with spreading branches. The leaves are broad and round with a sharp point and serrated edges. The flower stalk bears 3-6 yellowish-white, five petalled flowers on stalks half-joined to an oblong bract. The leaves are heart-shaped, greyish beneath and downy.

Parts used: Flowers, leaves, buds

Constituents:

- The major active compounds in Tilia are thought to be flavonoids (inc. hesperidin, quercetin, etc.), glycosides, and possibly a volatile oil(farnesol).[2101]
- Other constituents include phenolic acids (inc. chlorogenic and caffeic), mucilage (arabino-galactans), and tannins.

Pharmacology

One study found that a complex mixture of compounds, primarily flavonoids, reduced anxiety in mice. All of Tilia's active compounds appear to be soluble in water. It has been hypothesized that Tilia may relax muscles in arteries as well, thereby giving it a hypotensive effect.[2102]

Medicinal actions: Hypotensive, sedative, diaphoretic, anti-spasmodic

Historical Use: The European species (Tilia europea) is a common domestic remedy in Europe for the relief of many nervous and catarrhal disorders.

Traditional Medicinal Use:

King considered the properties of Tilia to be stimulant, lentitive, tonic, and nervine, being used to allay irritation and restlessness, and to promote rest and sleep. The hot infusion was employed to check diarrhoea from cold, and in the various forms of colds and catarrhal conditions, while, either hot or cold. It was also used in restlessness, nervous headaches, painful and difficult digestion, and mild hysteria. The effects upon the nervous system were sometimes obtained by an enema, or bath, prepared from the flowers.[2103]

Current Medicinal Use: The volatile oils and flavonoids give this product its sedative, antispasmodic, tonic and hypotensive effects. Tilia flowers are primarily indicated in nervous dyspepsia, hysterical states, headaches, and palpitations. It is relaxing overall, and is best combined with other remedies for its sedative actions.

- Cardiovascular Conditions: It is a reliable hypotensive, although it is rarely strong enough on its own to reduce blood pressure. It is gentle and well-tolerated and therefore is most efficacious as a part of a hypotensive formula. According to Johnathan Treasure, Tillia is used in formulas for atherosclerosis because it "takes fats from where they shouldn't be and puts them where they should be."
- Gastrointestinal Conditions: Clinical trials have shown that Tilia tea can help people with mild gallbladder problems (but not gallstones), dyspepsia, and excessive gas that causes the stomach to push up and put pressure on the heart (also known as the gastrocardiac syndrome.) [2104, 2105] Antispasmodic action on the intestines has been confirmed in at least one human study. [2106]
- Pulmonary Conditions: Tilia is also a notable diaphoretic and is often used in colds and flu to address the anxiety and tension headaches while stimulating diaphoresis (and thus immunity). Tilia alleviates pharyngeal irritation secondary to cough and post-nasal drip. Tilia and *Sambuccus nigra* are often combined together as an infusion for both prevention and treatment of influenza.

Pharmacy: The young, fresh flowers should be used in an infusion, as the aged flowers can be narcotic. Tinctures extract more volatile oil.

Infusion: 1 heaping tsp. /cup; 1 cup 3-5 times daily. [1 tsp. = 1.8 g]

1:5 tincture: 4 ml TID; 80 ml/week

Drug Interactions: No information is currently available from the selected resources.

Contraindications: No information is currently available from the selected resources.

Toxicity: No information is currently available from the selected resources.

[2101] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[2102] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

[2103] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

[2104] Fiegel VG, Hohensee F. Experimental and clinical screening of a dry, water extract of tiliae libri. *Arzneim Forsch* 1963;13:222–5 [in German].

[2105] Sadek HM. Treatment of hypertonic dyskinesias of Oddi's sphincter using a wild Tilia suspension. *Hospital (Rio J)* 1970;77:141–7 [in Portuguese].

[2106] Langer M. Clinical observations on an antispastic factor extracted from *Tiliae silvestris alburnum*. *Clin Ter* 1963;25:438–44 [in Italian].

Trifolium pratense/ T. alba/ T. repens/ T. pendulum

Leguminosae

other species: T. arvense, T. fibrinum, T. suberraneum
(Trifolium will refer to T. pratense in this monograph unless otherwise indicated)

Common name: red clover (T. pratense), white clover (T. alba), haresfoot clover (T. arvense)

Habitat: Throughout Europe and N. America. Grows in sunny, grassy areas. T. arvense is commonly found on dry sandy soils and heathlands.

Botanical description: The roots are perennial with several clusters of stems. The stem is slightly hairy growing to a height of 12 to 18 inches. The leaves are composed of three smooth, ovate leaflets with a whitish underside. The flowers are numerous, occasionally paired, sessile, pinkish to reddish purple in a large globular head.

T. arvese has brownish pink flowerheads.

Parts used: Flowerheads (gathered between May and September)

Historical Use: T. arvense has a long tradition as an antidiarrheic remedy.

Constituents:

T. pratense:

- Isoflavones: aglycones (formononetin which is also present in Cimicifuga racemosa, biochanin A)
- flavonoids, phenolic glycosides, coumarins, cyanogenic glycosides, minerals

Nothing is known about the constituents of T. arvense.

Pharmacology: Formononetin can be converted to daidzein, which in turn can be metabolized to equol by bowel flora. Equol has significantly more estrogenic activity than its precursors, yet is produced to different levels in different people. High equol producers are more likely to have greater estrogenic effects from use of Rubus (or Gylcine max. for that matter).[2107]

Medicinal actions: alterative, antispasmodic, expectorant, sedative, phytoestrogenic, nutritive, lymphatic

Medicinal use:

Trifolium is a very gentle herb, well-suited to long-term use. It is a pronounced alterative that combines nutritive properties (due to the high content of lime, silica, calcium, and other mineral salts) with sedative anti-inflammatory properties. It is ideally suited for children and the elderly. It is also indicated in persons with debilitating, chronic disease (i.e. mononucleosis, hepatitis). Trifolium is useful for any chronic condition of toxicity. The alterative properties of Trifolium derive from its gentle stimulation of metabolic activity. Its use helps to reduce the wear and tear of tissues that occurs in degenerative processes or the normal aging process. Trifolium is thought to improve mental functioning especially in persons who are overworked (stressed) with resultant confusion of ideas, loss of words or memories. Trifolium seems to enhance the uptake of oxygen and nutrients by the brain (this is as of yet undocumented).

- Alterative Effect: Trifolium (T. pratense and T. repens), by the doctrine of signatures, is a blood cleanser. Trifolium alba, white clover, is a lymphagogue. Trifolium enhances the detoxification functions of the liver, pancreas and spleen. As an alterative, Trifolium combines well with Arctium lappa and Echinacea spp. in the form of tea.
- Dermatological Conditions: The alterative properties of Trifolium give this herb great usefulness in the treatment of skin conditions. It is of great value in recurrent boils or acne, eczema, and psoriasis. When ingested in sufficient quantities, Trifolium can be used acutely for skin conditions such as acute contact or allergic dermatitis. Trifolium is also used for the healing of burns. It stimulates tissue repair. Red clover oil is often employed for this purpose. Red clover oil or ointment is useful to heal bed sores and other hard to heal wounds.
- Immune Conditions: It is included in many anti-cancer formulas for this reason and for the fact that it possesses anti-tumor actions.
- PulmonaryConditions: Trifolium seems to have a tropism for the throat and salivary glands. Trifolium is a gentle expectorant. It allays spasmodic coughs (anti-tussive action). It is also useful when there is dry irritation of the pharynx or larynx. Trifolium is a good herb to use in debilitated children with U.R.I.s, colds, flu, or atopic dermatitis. It can be sued successfully for whooping cough. It combines well with Thymus, Matricaria and Urtica for these purposes.
- Gastrointestinal Conditions: Trifolium is often added to digestive and mineral teas for its alkalinizing property and mineral content (explains the alkalinizing effect).
- Gynecologic Conditions: Finally, Trifolium possesses phytoestrogenic actions. Trifolium spp. exert some of the strongest phytoestrogenic effects among medicinal plants. It is a wonderful herb for menopausal women because of its phytoestrogenic and mineral constituents. Red clover may be used in douches or vaginal suppositories for vaginitis, as it will help to soothe the tissues, reduce inflammation and heal damaged tissue.

According to Mills and Bone:[2108]

Trifolium has eliminative properties as a lymphatic and expectorant being utilized in skin and joint disease, including those of an autoimmune nature. It is also included in cancer treatment.

According to Weiss:[2109]

- Gastrointestinal Conditions: Trifolium arvense has good diaphoretic properties. Although not scientifically researched, it is reported to decrease the length of severe dysentery-like diarrheas, particularly summer diarrhea in children and adults.
- Male Conditions: T. fibrinum has been used in sub-acute and chronic proctitis. For this condition it is used as a tonic to stimulate secretory function in the mucosa and improve smooth muscle tone in the bowel. Calamus can also be used this way.

According to Scudder:[2110]

- PulmonaryConditions: The Red Clover exerts a specific influence in some cases of whooping cough, and in the cough of measles. It is not curative in all, but when it has an effect, the benefit is speedy and permanent. It may also be prescribed in other cases of spasmodic cough, in laryngitis, bronchitis and phthisis (wasting).

According to King:

Specific Indications and Uses.—Some forms of whooping-cough; irritation of the laryngo-pulmonic passages; provoking spasmodic cough; cough of measles; cancerous diathesis.

Red clover is an excellent alterative, and one of the few remedies which favorably influences pertussis. In earlier editions of this work it was stated that "a strong infusion of the plant is said to afford prompt relief in whooping-cough, suspending the spasmodic cough entirely in 2 or 3 days; " Since then the remedy has come into extensive use, but the statement should be modified, as it does not reach all classes of cases. When the proper case is found it acts promptly, but as yet the specific indications in this complaint have not been discovered. It is also a remedy in other spasmodic coughs, as those of measles, bronchitis, laryngitis, phthisis (wasting), etc. It is an excellent internal agent for those individuals disposed to tibial and other forms of ulcers, and it unquestionably retards the growth of carcinomata, and may be freely administered to those of a cancerous diathesis. The extract, spread on linen or soft leather, has long been said to be an excellent remedy for cancerous ulcers. This assertion, however, has not been so well verified as its action in retarding the growths when administered internally for a prolonged period. It is also highly recommended in ill-conditioned ulcers of every kind, and deep, ragged-edged, and otherwise badly-conditioned burns. It possesses a peculiar soothing property, proves an efficient detergent, and promotes a healthful granulation.

Pharmacy: Infusion:

2-4 g (1-3 tsp.) dried flora per 8 oz. water (Dr. Alschuler)

The infusion (i to water Oj) may be used freely (Scudder)

Tincture:

1:5, sig 2-5 ml TID (Dr. Alschuler)

Prepare a tincture from the recently dried blossoms of Red Clover, viij. to Alcohol 50º Oj. Dose from gtt. j. to gtts. x. (Scudder)

Prepare from the recently dried flowers (viii) in 50 per cent alcohol (Oj) sig from 1 to 60 drops (King)

Specific Trifolium, 1 to 60 drops. (King)

1:1 Fluid extract 1-2 ml TID (Dr. Alschuler)

Standardized extract (Promensil™)

Trifolium Forte (decoction of flowers simmered over low heat for approximately one week results in a tarry substance that can be used topically over growths or burns).

Externally as oil, in steams, baths, and hair rinses

Pharmaceutical Preparation of Clover.—EXTRACT OF TRIFOLIUM COMPOUND. This preparation was a specialty of the Win.S. Merrell Chemical Co., of Cincinnati, Ohio. It is a combination of the alterative, tonic, and eliminative properties of the recently expressed juices or extracts from fresh or green plants with potassium iodide. The compound contains the extracts of Trifolium pratense, Stillingia sylvatica, Lappa minor, Phytolacca decandra, Cascara amarga, Berberis aquifolium, Podophyllum peltatum, tincture of Zanthoxylum carolinianum and potassium iodide. It is designed for administration in syphilis, scrofula, chronic rheumatism, glandular and various skin affections.

For whooping cough it is to be given in 1/2 fluid ounce, every 1 or 2 hours, throughout the day.

Contraindications:

Toxicity:

[2107] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 67

[2108] Mills and Bone p. 148, 254

[2109] Weiss RF. Herbal Medicine, 6th ed. Hippokrates Verlag GmbH 1996. p. 103, 115

[2110] Scudder J. Specific Medications and Specific Medicines.

Trigonella foenum-graecum

Leguminosae

Common name: Fenugreek

Habitat: The plant is native to the Mediterranean region, the Ukraine, India and China.

Botanical description: This plant grows up to 50 cm tall. The leaves are petiolate and in threes. Pale yellow flowers bloom in the axils of the leaves. The pods are up to 20 cm long and contain numerous seeds.

Part used: Seeds

Constituents:

- Carbohydrates predominately mucilage (galactomannans) 45%-60%, 50% of the seed is fiber.
- Protease inhibitors (act on human chymotrypsin and trypsin)
- Steroidal saponins which can be hydrolyzed into diosgenin and yamogenin
- Proteins (rich in tryptophan, poor in sulphur-containing amino acids 20%-30%), Fixed oil (unsaturated fatty acids) 6%-10%k, Furostanol glycosides (bitter principle), Sterols (sitosterol), Alkaloids including trigonelline, Essential oil (8%, 51 components), Flavonoids (Vitexin, saponaretin, homoorientin, rutin, quercetin, kaempferol glycosides, coumarins)

Medicinal actions: Hypoglycemic, demulcent, nutritive, laxative, digestive, antipyretic, expectorant.

Pharmacology:

Fenugreek seeds have demonstrated significant anti-diabetic effects in experimental and clinical studies. Administration of the defatted seed (in daily doses of 1.5-2g/kg) to both normal and diabetic dogs reduces fasting and postprandial blood levels of glucose, glucagon, somatostatin, insulin, total cholesterol and triglycerides, while increasing HDL cholesterol levels. [2111, 2112] Foenugracein may have a hypoglycemic action along with virostatic and cardiotonic actions.[2113] It slows the metabolism of nicotinic acid (present in Trigonella). Nicotinic acid normally increases glucose uptake from the blood and its subsequent oxidation. The seeds are rich in dietary fiber, which may also contribute to the hypoglycemic effect in diabetes. [2114] Coumarin and trigonelline may also contribute to the hypoglycemic effect.

The mucilage in Trigonella seeds is postulated to coat the mucosa of the gastrointestinal tract thereby inhibiting the absorption of nutrients, which may explain the hypocholesterolemic effect of fenugreek as the addition of fenugreek seeds to a hypercholesterolemic diet prevented a rise in the cholesterol level.[2115] In turn, the steroidal saponins account for many of the beneficial effects of Trigonella, particularly the inhibition of cholesterol absorption and synthesis. [2116]

Aqueous extracts of the seeds stimulate uterine contractions, intestinal peristalsis and have a positive chronotropic action on the heart.[2117]

Orally administered aqueous extract of fenugreek seeds to rats promotes the healing of gastric ulcers.[2118]

Traditional Medicinal Use: Neither Cook nor King described this herb.

Current Medicinal Use: Trigonella has a variety of clinical applications. Trigonella seeds are an alternative source of diosgenin for steroid hormone manufacture. Fenugreek is also used a flavoring agent in coffee and vanilla.

- Endocrine Conditions: Trigonella is used in the treatment of diabetes. The hypoglycemic effects of Trigonella have been observed for centuries and this plant is often part of formulas to lower blood sugar. However, the hypoglycemic action of fenugreek seeds appears to be weak and transient when it is given to diabetic patients. Trigonella is best used along with other herbs to lower elevated blood sugar as it is not strong enough on its own.

Randomized and uncontrolled studies have confirmed Trigonella helps stabilize blood sugar control in patients with insulin-dependent and non-insulin-dependent diabetes. [2119,2120] Trigonella has been found to be effective for NIDDM in doses of 25 g of the powdered seeds for 15 days or 2.5 g daily for three months.[2121] Defatted fenugreek seed powder given twice daily at a 50g dose to insulin-dependent diabetics resulted in significant reduction in fasting blood sugar and improved glucose tolerance test results. There was also a 54% reduction in 24 hour urinary glucose excretion and significant reductions in LDL and VLDL cholesterol and triglyceride values. In non-insulin diabetics, the addition of 15g of powdered fenugreek seed soaked in water significantly reduced postprandial glucose levels during the meal tolerance test. [2122] One human study found that Trigonella can help lower cholesterol and blood sugar levels in persons with moderate atherosclerosis and non-insulin-dependent diabetes at a dose of 2.5 g daily for 3 months.[2123]

The digestive stimulating properties may be indirectly helpful in type II diabetics. People with intestinal malabsorption are nutrient depleted and hence they may crave foods with high glycemic indexes to give themselves immediate energy, a process that can certainly aggravate hyperglycemia.

- Gastrointestinal Conditions: Trigonella is a good bitter and carminative. These actions combined make it a useful digestive aid,

especially in someone with digestive insufficiency and small intestinal symptomatology. Fenugreek seeds will help to restore optimal digestive function and thus reduce the impetus to eat sugary foods.

- Metabolic Conditions: Trigonella is a good aid to cholesterol-lowering plans. Trigonella is often part of a more comprehensive plan. 5 g daily for three months lowered total cholesterol and triglycerides in 30 coronary artery NIDDM patients and 25 g lowered total cholesterol, LDL, VLDL and triglycerides in 10 hypercholesterolemic patients over a 4-24 week period.[2124]
- Pulmonary Conditions: Trigonella is also high in mucilage and this makes it indicated in respiratory congestion. The mucilage in the seeds reflexively hydrate the mucosa of the respiratory system thus facilitating easier expectoration.
- Topical Applications: Externally, Trigonella is a good emollient for boils, acne, eczema and other inflammations. It decreases the inflammation and helps to resolve the lesion.

Pharmacy: Dosage is large due to high fiber content (50%). Defatted seed is available if lipid content is of concern. For diabetics, begin with half dosing to avoid gastrointestinal irritation.
Infusion: 0.5 g / 1 cup water; cold infusion for at least 3 hours; 1 cup (sweetened o.k.) TID [1 tsp. = 4.5 gm]
Mix powdered seeds with hot water to create a paste for external application.

Drug Interactions:[2125]

- **Insulin:** due to potential additive effects (animal)
- **Oral drug** absorption may be decreased due to inhibition by the mucilage content (speculative).
- **Cholesterol-lowering agents:** possible additive effect (speculative)
- **Warfarin:** possible potentiation (speculative) although 5 g daily for 3 months did not affect fibrinogen, fibrinolytic activity or platelet aggregation (human).

Contraindications: Trigonella may be contraindicated for use during pregnancy due to emmenagogue and abortifacient effects (empirical) as well as potential uterine stimulant action (in vitro, animals).[2126]

Toxicity: No information is available from the selected resources.

[2111] Ribes, G, et al *Ann Nutr Metabol*, 28, 1984:37.

[2112] Pizzorno, J., et al: *The Textbook of Natural Medicine,* 2nd ed., Churchill Livingstone, New York, NY. 1999.

[2113] Ghosal S, Srivastava S, Chatterjee DC and Dutta SK *Phytochemistry*, 13, 1974:2247.

[2114] Ribes G, Sauvaire Y, Da Costa C, et al. Antidiabetic effects of subfractions from fenugreek seeds in diabetic dogs. *Proc Soc Exp Biol Med* 1986;182:159–66.

[2115] Sharma RD *Nutr Rep Int*, 33, 1986:669.

[2116] Sauvaire Y, Ribes G, Baccou JC, Loubatieres-Mariani MM. Implication of steroid saponins and sapogenins in the hypocholesterolemic effect of fenugreek. *Lipids* 1991;26:191–7.

[2117] Abdo MS, Al-Kafawi AA *Planta Medica*, 17, 1969:14.

[2118] Al Meshal, IA, Parmar NS, Tariq M, Ageel AM, *Fitoterapia*, 56, 1985:236.

[2119] Madar Z, Abel R, Samish S, Arad J. Glucose-lowering effect of fenugreek in non-insulin dependent diabetics. *Eur J Clin Nutr* 1988;42:51–4.

[2120] Raghuram TC, Sharma RD, Sivakumar B, Sahay BK. Effect of fenugreek seeds on intravenous glucose disposition in non-insulin dependent diabetic patients. *Phytother Res* 1994;8:83–6.

[2121] Sharma RD, Raghuram TC, Rao NS. Effect of fenugreek seeds on blood glucose and serum lipids in type I diabetes. *Eur J Clin Nutr* 1990;44:301–6.

[2122] Mada Z, Abel R, Samish S, Arad J. Glucose-lowering effect of fenugreek in non-insulin dependent diabetics. Eur J Clin Nutr 1988; 42: 51-54

[2123] Bordia A, Verma SK, Srivastava KC. Effect of ginger *(Zingiber officinale* Rosc) and fenugreek *(Trigonella foenumgraecum* L) on blood lipids, blood sugar, and platelet aggregation in patients with coronary artery disease. *Prostagland Leukotrienes Essential Fatty Acids* 1997;56:379–84.

[2124] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 94

[2125] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 94

[2126] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 93

Trillium pendulum, T. erectum, T. sessile

Liliaceae

Common name: Bethroot, Birthroot

Habitat: Central and Western states in N. America

Botanical description: A low (4-12 inches high) growing herb with stout and unbranched stems. At the top of the stem there is a whorl of three large and broad leaves. A single flower with three large white petals grows from the axil of the leaf-whorl. The root is perennial, round, an inch in diameter, one to two inches long, fleshy and tuberous.

Parts used: Bulb/ Rhizome

Historical Use: Trillium was called birth root by the Native Americans of the Central and Western regions because of its use in aiding in parturition.

Energetics: Cooling and drying, an earth like smell and taste, can be initially sweet, then acrid.

Constituents: Saponin glycosides (trillin and trillarin), steroidal glycosides, tannins, fixed oil

Dr. King suggests that an aromatic portion is present, which contains an astringent principle although no volatile oil present.

Pharmacology: The astringent varieties have been found useful in *hemorrhage;* the acrid species in *chronic mucous discharges, bronchrrea, leukorrhea, menorrhagia, etc.*

Medicinal actions: Uterine tonic, astringent, expectorant, antiseptic, genito-urinary tract tonic, pelvic nervine

Medicinal use:

- Gynecologic Conditions: Trillium affects the mucous membranes most prominently. It is most indicated in tenacious mucus discharge with generalized pelvic debility. Excessive menstruation, leukorrhea, prolapsus uteri, poor vaginal tone, and threatened abortion are all indications for the use of Trillium. The astringent action of Trillium is pronounced, but will not cause excessive drying of the mucosa.

  Trillium is also a uterine tonic. It works when the uterus is weak and is not contracting fully and strongly. Trillium is therefore useful in menorrhagia, prolapsed uterus and leukorrhea. If taken before parturition, Trillium will facilitate uterine contractions and thus labor. Trillium will also reduce the occurrence and severity of post-partum hemorrhage and pain. Trillium root is a relaxing stimulant and while it's initial action is quick, the mild tonification and astringency it imparts will persist for several hours.
- Topical Applications: The topical application of Trillium is also indicated for its astringent and mild antiseptic properties. Ulcers and inflammatory swellings respond well to the topical application of Trillium.
- PulmonaryConditions: Trillium has also been used to treat pulmonary congestion, cough and bronchial congestion. In these conditions, the Trillium acts to reduce mucous accumulation and soothes spasmodic coughing. Trillium also reduces the tendency to hemorrhage (more likely with forceful coughing).
- Other Indications: Trillium may be used to relieve hemorrhage of the kidneys, bladder, bowels, stomach, lungs and nose. Trillium is a mild antiseptic especially in topical form. One key to the success of this plant is effective dosing (see below).

According to Scudder:[2127]

The common use of Trillium in large doses obtained its astringent influence, possibly from the tannin it contains. The preparation from the fresh root is only slightly astringent.

We would employ it in disease of mucous membranes with increased secretion, and expect decided benefit. In the earlier part of my practice I used Trillium in chronic bronchitis, in chronic catarrh, in cough with free expectoration, with excellent results.

According to King's:[2128]

Specific indications for Trillium include relaxation of tissues with mucous discharges or passive hemorrhage.

- PulmonaryConditions: Trillium is successfully employed in *hemoptysis*, *dyspnea, cough, asthma.* Given the acrid species are useful in *chronic affections of the respiratory organs, phthisis (wasting), hectic fever*, etc. All varieties are effective internally or externally for *chronic mucous discharges, including bronchorrea.* The red Trillium varieties will check ordinary*epistaxis* by merely smelling the freshly-exposed surface of the recent root.
- Gynecologic Conditions: All varieties are effective internally or externally for *chronic mucous discharges,* in *menorrhagia, uterine hemorrhage, metrorrhagia, leukorrhea, etc*. It has been traditionally used by Native American women to promote parturition.
- Genitourinary Conditions: Trillium is successfully employed in *hematuria*
- Gastrointestinal Conditions: Boiled in milk, Trillium has been administered with benefit in *diarrhea and dysentery*.

- Endocrine Conditions: Infusion of equal parts of Trillium and Lycopus virginicus ahs been highly recommended for the cure of *diabetes.* It does not diminish the amount of sugar excreted in the saccharine form, but restrains the secretion of the renal discharges in both forms.
- External Conditions: A poultice is very useful in *tumors, indolent or offensive ulcers, anthrax, buboes, stings of insects and to restrain gangrene*. In some instances its efficacy has been increased by combination with Sanguinaria.

According to Cook:[2129]

The root is possessed of relaxing and stimulating properties, which act with moderate promptness and leaves a mild tonic and astringent impression that is quite persistent. The mucous membranes receive most of its influence and it is used in tenacious mucous discharges with debility as in chronic dysentery, leukorrhea, catarrh, etc. Its astringency is not so great as to cause dryness yet is sufficiently marked to diminish superfluous discharges prove of the greatest service in bleeding from the lungs, nose, stomach, bowels, kidneys and bladder

- Gynecologic Conditions: It is particularly useful in checking excessive menstruation and lochia. Its power over hemorrhages is peculiar and excellent and it is one of the very few remedies that prove reliable in the hemorrhagic diathesis. There is a moderate antiseptic power in it, which makes it available in foul leukorrhea as an injection. Like Rubus and Arctostaphylos it exerts a distinct, and proportionately stronger, influence over the uterus, promotes parturition in languid cases, anticipates flooding, relieves after-pains (especially in company with Cypripedium) and is an excellent associate with Convallaria, Symphytum and Aralia racemosa, in all ordinary female weaknesses, particularly when the tissues are lax. The leaves are also used as an application to ulcers and swellings. The common impression of the astringency of the root has led many practitioners to overlook its excellent tonic properties; but it is a remedy deserving of the first attention in the cases above named.
- Topical Applications: There is a moderate antiseptic power in it, which makes it available as a local application in foul and somewhat degenerative ulcers.

Pharmacy:

Powdered herb:
1 dram to be given in hot water (King)
10-20 grains 3-4 x day (Cook)

Infusion:
1 tsp. dried radix or 2 tsp. fresh root per cup water; drink 3-4 c/ day as a tonic, or 1/2 c every 15 min to 1/2 hr. to slow bleeding (Dr. Tilgner and Dr. Dipasquale)
strong infusion, 2-4 oz. qd (King)
1 oz to 1 pint water, sig 1 oz doses (Cook)

Tincture:
1:5 1-4 ml TID – QID (Dr. Alschuler)
1:1 fresh plant extract 10-60 drops as necessary every 15 min, not to exceed 360 drops (2 tsp.) per day. (Tilgner)
fresh root, viij. to Alcohol 76º Oj. Dose from 1-20 gtt (Scudder, King)

Topical application:
Powdered Trillium and powdered Ulmus with a small part of Lobelia mixed into warm water (i.e. 2 oz. of Trillium, 2 oz. of Ulmus, 1/4 oz. Lobelia seed) is an excellent topical wash for ulcers (including vaginal ulcers) (Dr. Alschuler)
For uterus prolapsus, leukorrhea: Trillium combines well with Geranium maculatum (Alschuler)

Contraindications: Trillium can be irritating to the mucosa and may therefore be contraindicated in conditions of inflammation of the alimentary tract.[2130] Brinker also lists it as an emmenagogue. Contraindicated in pregnancy except just prior to labor.

THIS PLANT IS BECOMING ENDANGERED AND IS PROTECTED IN SOME STATES. USE IT SPARINGLY.

[2127] Scudder J. Specific Medications and Specific Medicines.

[2128] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983, p. 1997

[2129] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy… Eclectic Medical Publications, Sandy, OR 1985 p. 715-16

[2130] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 152

Turnera diffusa (T. aphrodisiaca) **Turneraceae**

Common name: Damiana

Habitat: Tropical parts of the SW USA, Mexico, and Africa

Botanical description: A small shrub with ovate leaves that broaden towards the top end. The leaves are smooth and pale green. The flowers are yellow that arise singly from the axilla of the leaves. The flower has an aromatic smell and bitter taste.

Parts Used: Leaves

Historical Use: Damiana has a long history of use as an aphrodisiac and euphoric.

Constituents: Volatile oil (0.2-1%), resin (14%), tannin (3.5%), starch (6%), bitter compound (damianian), flavonoids, hydroquinone, arbutin

Medicinal actions: nerve tonic and trophorestorative, anti-depressant, urinary antiseptic, laxative, aphrodisiac

Medicinal use:

- Nervous Conditions: Damiana is an excellent nerve tonic especially when the person is experiencing anxiety and/or depression, sympathetic predominance, and lowered sexual drive. It has a long and wide-spread use as an aphrodisiac and seems to be most indicated therapeutically in cases of anxiety or depression that have impotence or low sexual desire as a main manifestation.
- Gynecologic Conditions: It is also a pelvic tonic and demulcent. In addition, as a pelvic tonic, damiana can be used for oligomenorrhea, suppressed menstruation, and amenorrhea. It is an emmenagogue and this is most likely where these effects are derived from. Damiana can also be effective treatment for premenstrual acne, dysmenorrhea, and headache.
- Genitourinary Conditions: It can be used for cases of cystitis and nephritis, especially with excessive mucous discharge.
- Male Conditions: In men, Damiana will address impotence, especially when associated with a lack of desire or inability to relax. It can also be used as a male tonic, and combines well with Equisteum spp., Piper methysticum, Alchemilla vulgaris, and Serenoa repens.

According to Mills and Bone:[2131]

Turnera is considered a traditional tonic herb. In general, tonics are indicated in convalescence, debilitating conditions with or without anorexia and chronic fatigue syndrome.

- Nervous Conditions: Turnera is a tonic and trophorestorative supporting the nervous system, particularly with hormonal concurrent symptoms and combines well with Withania for such conditions. Nervous trophorestoratives in general are used for nervous exhaustion, neuralgia, herpes infections, depression and insomnia after falling asleep, convalescence and neurasthenia (see Avena for a discussion on neurasthenia)..
- Male Conditions: Turnera has been traditionally used to relieve some of the problems of older men including support for benign prostatic hypertrophy.

According to King:

Specific Indications and Uses.—To relieve irritation of the genito-urinary mucous surfaces. (Sexual weakness and debility, with nervousness and depression [?]).

This drug has been almost eulogized for its positive aphrodisiac effects, acting energetically upon the genito-urinary organs of both sexes, removing impotence in the one, and frigidity in the other, whether due to abuses or age. Many physicians who have tried it, deny its possession of such virtues, but the friends of the drug attribute their failures to the use of the spurious articles. It will very likely be found to possess laxative, tonic, and diuretic properties only; and the aphrodisiac effects following its use, no more prove that these belong to it, than the same effects, that not infrequently appear after the employment of many other agents prove that such agents possess similar excitant virtues. Upon the system at large, it exerts a tonic influence, and is useful in some cases of chronic cystic and renal catarrh. It relieves irritation of the urinary mucous membranes, improves digestion, and overcomes constipation in some instances. In respiratory disorders, it may be employed to relieve irritation and cough, and, by its tonic properties, to cheek hypersecretion from the broncho-pulmonic membranes.

Pharmacy: According to Mills and Bone, trophorestoratives may be taken as required or before food. In regard to tonic herbs, the digestive capacity is the main determinant of dosage. If the stomach and digestive function is deficient, then tonics may be given with or after meals. In severe cases, they may need to be taken with liquid meals. Dosage should be small and frequent. Long-term therapy is the norm.[2132]

Infusion: 1 tsp. leaves/cup water; sig 1 cup TID
When drunk in sufficient amounts (2 heaping tsp./cup) an aphrodisiac-like high can occur. An infusion may need to be drunk daily for several weeks in order to create a lasting effect on sexual desire. (Dr. Alschuler)
Tincture 1:5 60% EtOH; sig 1-2 ml TID
Fluid extract is from 1/2 fluid drachm to 1/2 fluid ounce(King)
Specific Damiana, 5 to 60drops (King)
Smoked (combines well with Scutellaria laterifolia, Lobelia inflata, Passiflora incarnata, Mentha spicata; this blend being known as Yuba Gold): induces a marijuana-like euphoria along with systemic relaxation, particularly noted in the bronchioles in asthmatics.

Contraindications: According to Mills and Bone, tonic herbs in general are to be used with caution in severe debility, particularly when associated with immune or digestive collapse; renal or hepatic failure; rampant cancer or strong chemotherapy treatments. Brinker describes the potential oral hypoglycemic effect with Turnera.[2133]

Toxicity:

[2131] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 155, 225, 234
[2132] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. p 155
[2133] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 164-5

Tussilago farfara — Compositae

Common name: Coltsfoot (Apparently, Asarum canadense also shared the common name of coltsfoot)

Habitat:

Botanical description: The root is perennial, small, creeping, blackish-brown, with numerous fibers. The flower stems rise directly from the root, appearing early in spring before the leaves, from 6-8 inches high, and each bearing a single flower head. The flower appears as a daisy in early spring, with bright yellow ray florets in several rows. Leaves all radical, appearing later in the season than the flowers.

Parts used: Leaves, flowers

Constituents: Flavonoids (rutin, hyperoside, isoquercetin), mucilage (8%), pyrrolizidine alkaloids (0%-0.015%), tannin, bitter glycosides

Pharmacology: No information is currently available

Medicinal actions: Expectorant, demulcent, antitussive, anticatarrhal

Traditional Medicinal Use:
Cook described the root as a stimulant and relaxant with a warming taste, and with some demulcent property. Its warm infusion was considered to promote an outward circulation, increase expectoration, and leave a warm and slightly tonic impression.[2134]

- Hepatobiliary Conditions: Tussilago was used by some Physiomedical physicians as a depurative to the liver and as a good hepatic tonic of the moderately stimulating grade in scrofulous cases.
- Pulmonary Conditions: The principal use made of Tussilago was in debilitated coughs, whooping- cough, and humid forms of asthma; for all of which it was combined with such articles as Prunus or Eupatorium perfoliatum, though Cook considered that its virtues have probably been overrated.
  The powder was used as a snuff in chronic catarrh, when the discharge has become viscid and offensive.

Current Medicinal Use:
The mucilage and bitter combine to make it a soothing tonic. The tannin in Tussilago gives it astringent action and supports the tonic action from the bitter principles.

- Genitourinary Conditions: Tussilago is also a diuretic and may be used in the treatment of cystitis.
- Pulmonary Conditions: Tussilago is a diffusive expectorant, sedative and demulcent, most useful in debilitated and chronic conditions. Tussilago is most efficacious in chronic cases of cough such as emphysema and silicosis. Weiss recommends taking a cup of Tussilago tea first thing in the morning and at night in order to relieve the chronic cough associated with these conditions. For spasmodic coughs, such as that of asthma, chronic or acute bronchitis, and whooping cough, Tussilago combines well with Lobelia, Amni visnaga (khellin), and Viburnum. In general, Tussilago combines well with other lung tonics such as Inula, Eriodictyon, and Verbascum. However, its chronic use is limited in some people due to the presence of pyrrolizidine alkaloids. Even though the amount of these alkaloids is so small, their presence suggests caution in certain individuals. Coltsfoot leaf was originally approved for the treatment of sore throats in the German Commission E monograph but has since been banned in Germany for internal use.
- Topical Applications: The fresh bruised leaves may be applied topically to boils, abscesses and suppurating ulcers.

Pharmacy: Infusion 1-2 tsp./cup water; sig 1 cup BID-TID
1:5 tincture 2-5 ml TID

Contraindications:
Tussilago is relatively contraindicated in children who are more susceptible to the effects of pyrrolizidine alkaloids, but if prescribed in small medicinal doses, it should not be a problem.

Other people who should avoid pyrrolizidine alkaloids include pregnant or nursing mothers. Prolonged use, longer than 4-6 weeks per year is contraindicated due to accumulation of pyrrolizidine alkaloids.

Persons with elevated liver enzymes or known liver disease should not be taking Tussilago.

Toxicity:
One case has been reported of neo-natal fatality from veno-occlusive disease with apparent daily consumption by the mother of tea made from the leaves.[2135]

Use of any pyrrolizidine alkaloid containing plant in conjunction with Eucalyptus is contraindicated due to microsomal enzyme induction.

[2134] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy. Eclectic Medical Publications, Sandy, OR 1985

[2135] Brinker, F Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 62-3

Ulmus fulfva

Ulmaceae

Common name: Slippery elm

Habitat: Central and Northern U.S. and Canada

Botanical description: Ulmus is a small tree. It has rough branches, long toothed leaves with hair on both sides. The inner bark is the medicinal part. Many trees are stripped to their death. The inner bark is sold in flat pieces 2-3 ft. long, several inches wide and 1/8 to 1/16 inch in diameter. The bark is tough and flexible. The outer bark is longitudinally striated and of a reddish color. The inner bark is paler and finely ridged.

Parts used: Inner bark (bark from 10 year old trees is considered superior to bark from younger trees)

Constituents: Mucilage

Medicinal actions: Demulcent, emollient, expectorant, diuretic, astringent, anti-inflammatory, nutritive.

Medicinal use:

Ulmus fulva is one of the most useful herbal remedies. Its high content of mucilage give it effects similiar to Althea. Ulmus combines well with almost all herbs and can be a useful addition to respiratory, urinary, and gastrointestinal formulas.

- Gastrointestinal Conditions: It is a gastrointestinal emollient, demulcent, and anti-inflammatory. Ulmus both soothes and astringes the inflammed and hypersecreting intestinal mucosa. Ulmus seems especially well-suited for inflammatory and nervous diarrhea and can allay diarrhea in otherwise intractable cases. It is useful in gastritis, PUD, enteritis, colitis, diarrhea. Ulmus is well-tolerated even in situations of gastric upset and N/V.

Ulmus is very nutritious as well. Elderly persons and infants with debilitation and/or inflammation of the digestive system will benefit greatly from.

Ulmus can be used as part of a vermifuge formula and is well absorbed for this purpose as a suppository.

- PulmonaryCondtions: Through reflex action, it is a respiratory soothing expectorant (especially in spasmodic coughs)
- Genitourinary Conditions: It is a soothing diuretic.
- Nervous Conditions: Ulmus seems to exert a pacifying influence on the nervous system, even to the exent of acting as a somnerific.
- Topical Applications: Ulmus is a useful topical agent. When applied topically to inflammatory wounds such as abcesses, boils, ulcers, hemorrhoids, and burns, a soothing, healing, anodyne and antiinflammatory effect is observed. Ulmus may be applied to an infected gum or cavity to lessen the pain and delay the decay. Ulmus is typically avoided on open wounds.

Mills and Bone:[2136]

- Gastrointestinal Conditions
  - Digestive inflammation: Mucilaginous and healing properties of ulmus.
  - Constipation: Ulmus increases stool bulk.
  - Diarrhea: The mucilage helps to ease the effects of cytotoxins and inflammation.
  - Diverticular disease: As a source of fiber that also helps maintain healthy flora.
  - Dyspepsia and GERD: As a mucoprotectant taken after meals or before bed.
  - Hemorrhoids: The mucilage keeps the stool soft.
  - Intestinal permeability: By reducing inflammation.
  - IBS: To reduce associated constipation.
- Metabolic Conditions:
  - Hyperlipidemia: The mucilage is a type of soluble fiber that is metabolized by intestinal flora to produce short chain fatty acids (SCFA). These SCFA can influence the liver to reduce cholesterol synthesis.
- PulmonaryCondtions: The mucilage has a soothing and anti-inflammatory effect on the lower respiratory tract.

According to Cook:[2137]

Ulmus acts soothingly upon all mucous membranes and the cold water infusion may be used to best advantage in all mucous irritaitons and inflammations as of the bronchi, lungs, stomach, bowels, kidneys, bladder and uterus. It is used in forms of fever where the intestinal canal is liable to irritation.

The mucilage when made thick si sometimes uesd as avehicle for other, powerful herbs. The mucilage or the powder makes the most soothing of all injections in acute dysentery, and a vehicle when any remedy to to be give by injection with reference to its being retained in the bowel for the sake of its slow action. (Here Cook describes injections for which the modern description would be an rectal implantation or a retention enema.)

- Gynecologic Conditions: It has been used previous to parturition, to secure moistness and early distension of the passages.

- Topical Applications: The powder makes one of the most soothing and available of all demuclent poultices for inflamed surfaces, ora basis for poultices when any class of powders are to be mixed with a demulcent.

According to King:[2138]

Elm bark is nutritive, expectorant, diuretic, demulcent, and emollient, and is a very valuable remedial agent.

In mucous inflammations of the lungs, bowels, stomach, bladder, or kidneys, used freely in the form of a mucilaginous drink. It is highly beneficial, as well as in diarrhoea, dysentery, coughs, pleurisy, strangury, and sore throat, in all of which it tends powerfully to allay the inflammation.

- Gastrointestinal Conditions: As an injection, the infusion will prove useful in diarrhoea, dysentery, tenesmus, and hemorrhoids, also in gonorrhoea and gleet (mucous discharge from the urethra in chronic gonorrhea).
- Gynecologic Conditions: Some physicians consider the constant use of it, during and after the seventh month of gestation, as advantageous in facilitating and causing an easy delivery (1/2 pint of the infusion to be drank daily).
- Topical Applications: Elm bark has likewise been successfully employed externally in cutaneous diseases, especially in obstinate cases of herpetic and syphilitic eruptions. As an emollient poultice, the bark has been applied to inflamed parts, suppurating tumors, fresh wounds, burns, scalds, bruises, and ulcers. In the excruciating pains of the testes, which accompany the metastasis of mumps, whether of recent or long standing, the constant use of an elm poultice, regularly changed every 4 hours, will be found a superior remedy.

Pharmacy: Ulmus often works the best if dosed frequently. Do not combine mucilagenous herbs with tannin rich herbs as the mucilages will precipitate out.

Decoction:

Mix 1 part powder to 8 parts water (mix the powder with small amount cold water initially to insure the mixing); bring to boil and simmer for 10-15 minutes; sig 1/2 cup TID

Mix 1 tsp. powder or cut & sifted bark into 1 cup cold water. Let sit for 4-12 hours, strain; sig 1/2 cup BID-QID (Alschuler)

A tablespoonful of the powder boiled in a pint of new milk, affords a nourishing diet for infants weaned from the breast, preventing the bowel complaints to which they are subject, and rendering them fat and healthy (King)

Gruel:

Mix 1 tsp. powder in just enough cold water to make a paste; add 1 cup hot water and cinnamon and/or sugar, stir; drink 1/2 cup BID-QID (Alschuler)

Poultice:

Mix the powder with enough boiling water to make a paste (Alschuler)

Injection:

1 tsp. powder in 4-6 oz. cold water. Let stand until thickened (Cook)

Contraindications: Notwithstanding its general value as an application to ulcers, it may be injurious when used as a cataplasm (poultice) to ulcers, which might be cured by astringent or other washes. It could render the ulcer more irritable and difficult to heal.[2139]

Toxicity: Safe herb/food

[2136] Mills, S. Bone, K. Principles and Practice of Phytotherapy. Churchhill Livingstone, 2000.

[2137] Cook, WM. The Physio-Medical Dispensatory: a Treatise on Therapeutics, Materia Medica and Pharmacy... Eclectic Medical Publications, Sandy, OR 1985 p. 719-20

[2138] Felter HW, Lloyd JU. King's American Dispensatory, 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983

[2139] ibid

Uncaria gambir

Common name: Gambir

Habitat:

Botanical description:

Part used: leaf, root

Historical use: No information is currently available.

Energetics: No information is currently available.

Constituents:

- Oxyindole alkaloids
- Glycosides
- Tannins: 30-35%

Pharmacology: Oxyindole alkaloids may give cat's claw much of its ability to stimulate the immune system. The alkaloids and other constituents, such as glycosides, may account for the anti-inflammatory and antioxidant actions of this herb.[2140, 2141]

Medicinal actions:

Medicinal uses:

- **Infectious Conditions:** The standardized extract of cat's claw has been tested in small, uncontrolled studies and showed promise in preventing CD4 cell counts from dropping and reducing the incidence of opportunistic infections in HIV and AIDS.[2142,2143] Further study is needed to determine efficacy.
- **Musculoskeletal Conditions:** Although a traditional remedy for osteoarthritis and rheumatoid arthritis, no human studies have been performed.

Current Research Review:

- Search of Medline revealed no human trials as of 11/19/02.

Pharmacy:

Contraindications: The use of tannins is contraindicated or inappropriate in cases of constipation, iron deficiency and malnutrition.[2144] Tannin rich herbs may reduce the absorption of alkaloids and other basic drugs through precipitation.[2145]

Toxicity:

[2140] Aquino R, De Feo V, De Simone F, et al. Plant metabolites, new compounds and antiinflammatory activity of *Uncaria tomentosa. J Nat Prod* 1991; 54:453–9.

[2141] Rizzi R, Re F, Bianchi A, et al. Mutagenic and antimutagenic activities of *Uncaria tomentosa* and its extracts. *J Ethnopharmacol* 1993; 38:63–77.

[2142] Keplinger UM. Influence of Krallendorn extract on retroviral infection. *Zu"rcher AIDS Kongress* Zurich, Switzerland, Oct 16–7, 1992 [abstract in German].

[2143] Keplinger UM. Therapy of HIV-infected individuals in the pathological categories CDC A1 and CDC B2 with a preparation containing IMM-207. IV. *O"sterreichischer AIDS-Kongress*, Vienna, Austria, Sept 17–8, 1993, 45 [abstract].

[2144] Mills and Bone, p 170

[2145] Brinker, F. Herb Contraindications and Drug Interactions. Eclectic Medical Publications, Sandy, OR 1998. p. 159

Urtica dioica — Urticaceae

Common name: Nettle, Stinging nettle

Habitat: Grows throughout Europe and N. America

Botanical description: A 60-120 cm tall herb bearing ovate and acuminate leaves with a coarsely serrate margin. The leaves are dark green to pale green underneath. The leaves are covered with erect stinging hairs and softer non-stinging hairs. The stems are square and more than 3 mm thick. The whitish-green flowers occur as panicles larger than the leaf petioles. (Urtica urens is differentiated by the flowering panicles which are shorter than the leaf petioles.)

Parts used: Herba, Radix, Seeds

Constituents: There has been a great deal of controversy regarding the identity of nettle's active constituents. Currently it is thought that polysaccharides (complex sugars) and lectins (large protein-sugar molecules) are probably the active constituents.[2146]

- Flavonoids (glycosides of quercetin, kaempferol, and rhamnetin) concentrated in flowers
- Carotenoids: B-carotene and xanthophylls
- Vitamins C, B, K1;
- Triterpenes
- Sterols (including (-sitosterol)
- Mineral salts including silica, potassium salts, nitrates
- Formic, acetic, citric and other acids
- Amines in stinging hairs including histamine, serotonin, choline

Pharmacology:

The leaf has been shown to be anti-inflammatory by preventing the body from making inflammatory prostaglandins.

Urtica root has been demonstrated to inhibit aromatase conversion of testosterone to 17β estradiol in combination with Pygeum africanum.[2147] Nettle's root affects hormones and proteins that carry sex hormones in the body; this may explain why it helps benign prostatic hyperplasia (BPH).[2148, 2149]

Extracts of nettle also weakly inhibit 5 α reductase, inhibits the classic complement pathway, inhibit cyclooxygenase and 5-lipoxygenase, may stimulate the antiinflammatory cytokine IL-6 (IL-6 inhibits prostaglandin E2 synthesis), and may decrease the release of TNF α and IL-1 β. Nettle hairs contain acetylcholine and may be comparable to the concentrations in stores of cholinergic nerve endings in animals.

Medicinal actions: tonic, anti-inflammatory, diuretic, astringent, expectorant, anti-allergic, reduces BPH, anti-rheumatic

Traditional Medicinal Use:

Specific indications and Uses: Chronic diarrhoea and dysentery, with large mucous evacuations; profuse secretion of gastric juice, with eructations and emesis; choleraic discharges; summer bowel diseases. of children, with copious watery and mucous passages; chronic eczematous eruptions.[2150]

Cook described the root as a strong astringent, with moderately stimulating and tonic qualities. Apparently the Physiomedicalists only used the root of Urtica, while the Eclectics used all parts of the plant.

- Dermatologic Conditions: Some Eclectic physicians praised the specific tincture of the seeds as a local application for severe forms of eczema.
- Endocrine Conditions: The seeds, according to King, were highly recommended as a remedy for goiter.
- Gastrointestinal Conditions: The Eclectics used Urtica radix for diarrhea, being reserved for chronic cases with profuse discharges. They also used a strong syrup made of the root, wild-cherry bark and blackberry root as a remedy for all bowel affections of adults. For cholera infantum and other disorders with profuse watery or mucous discharges, specific Urtica was used. The seeds were used by the Eclectics to reduce excessive obesity and as an anthelmintic.
- Genitourinary Conditions: King recommended the use of Urtica radix a variety of nephritic complaints, where as Cook was not impressed with its effect on the kidneys.
- Hematological Conditions: As a hemostatic, Urtica radix was considered to have few equals, according to the Physiomedicalists. The infusion or tincture was used internally power for bleeding from the nose, lungs, stomach, bowels and passive menorrhagia.
- Topical Applications: Urtica leaves have been used as a powerful rubefacient and as a styptic when applied to bleeding. The juice was used by the Eclectics as a treatment for warts as well.
- Inflammatory Conditions: A wine made from the seeds and flowers was used in small doses by the Eclectics for forms of malarial-like fevers.

Current Medicinal Use: Urtica dioica has a wide variety of uses. Only a few of these uses have been studied clinically.

- Endocrine Conditions: Brinker reports that Urtica has a hypoglycemic effect.[2151]
- Genitourinary Conditions: One of the most widespread and best studied effects of nettles is its mild diuretic action. Recent investigations have confirmed this action.[2152] In fact, this is the only usage for nettles listed in the German Commission E monograph. Urtica appears to increase urine output and to increase the removal of uric acid and may be helpful in the treatment of gout.[2153] The diuretic action of Urtica makes it useful in the treatment of edema, arthritis with swollen joints, and congestive heart disease.
  David Winston, a renowned herbalist and Cherokee medicine man, has recently started using the seed as a renal trophorestorative in patients with chronic renal failure.
- Male Conditions: The extract of the root may increase urinary volume and the maximum flow rate of urine in men with early-stage BPH. It has been successfully combined with both saw palmetto and Pygeum to treat BPH.[2154, 2155] In a number of uncontrolled trials nettle root extract improved BPH urinary symptomology such as frequency, nocturia, and urinary flow. The dosage ranged from 600-1200 mg per day of the 5:1 extract over 3 weeks. Other studies have demonstrated the ability to lower levels of sex hormone binding globulin (SHBG), a independent etiological factor in the development of BPH and prostate cancer. [2156]
- Metabolic Conditions: Urtica is often included in re-mineralization teas. Urtica contains many minerals. Minerals found in plants are generally quite bioavailable, especially after the cell walls in the plant material is broken down. The minerals in plants occur as mineral salts which are generally highly absorbable at gastric pH. When Urtica is steeped for a long period of time, for instance overnight, the minerals in the plant leach into the water. Similarly, if Urtica is steamed and/or cooked and eaten, the cell walls are destroyed which makes the minerals bioavailable. Thus Urtica, along with other mineral-rich herbs such as Medicago sativa, Trifolium spp., Equisteum arvense, Rumex crispus, etc. is an excellent way to increase the mineral stores of the body.
- Musculoskeletal Conditions: One case report of arthritis describes the counterirritant effect of fresh nettle applied over several weeks. Also a number of open and pilot studies demonstrated improvements in C-reactive protein and total joint score and pain relief comparable to NSAID therapy.[2157]
- Neurological Conditions: Dr. Bill Mitchell recommends 1000 mg Urtica tid for treatment of migraine headache.
- Pulmonary Conditions: Urtica has been employed in the treatment of allergies and colds and flus. It appears as though Nettle reduces histamine-mediated allergic reactions. This is somewhat paradoxical since the stinging hairs of Urtica contain histaminic acid. Nonetheless, clinical experience with various extracts of nettles have repeatedly demonstrated this anti-allergic effect. Allergic reactions are both prevented and, if they occur, the severity of the reaction is reduced. Urtica can be used singly or in combination for the treatment of asthma, environmental allergies, hives, rhinitis, and sinusitis.
- Male Conditions: A more recent use of Urtica is in the treatment of BPH. Extracts of nettles, especially the root, appears to alter the binding of 5-α-dihydrotestosterone to sex hormone binding globulin (SHBG).[2158] Lignans found in nettle extracts have been shown to bind to SHBG which is postulated to have two results. One is the displacement of steroid hormones such as testosterone from SHBG. The other result is the inhibition of SHBG binding to its cellular receptor. The net effect of both of these actions is to reduce testosterone-induced stimulation of prostatic cAMP and consequent prostatic hyperplasia.[2159]
  Nettle extracts also appear to inhibit Na- and K-ATPase pumps in prostate cells.[2160] Administration of Urtica decreases residual urine volume and increases urine flow.[2161] The mineral content of Urtica might further explain the effectiveness of this plant in treating BPH. The minerals may help to strengthen the connective tissue of the pelvic area.

Current Research Review:

- **Rheumatology:**
  - **Osteoarthritis:**[2162]
    - Design: Randomized double-blind placebo-controlled crossover clinical trial
    - Patients: Twenty-seven patients with osteoarthritic pain at the base of the thumb or index finger.
    - Therapy: Stinging nettle leaf (Urtica dioica) qd x 1 week topically to the painful area. Placebo- white deadnettle leaf (Lamium album) x 1 week after five-week washout period.
    - Results: After one week's treatment with stinging nettle, score reductions on both visual analogue scale (pain) and health assessment questionnaire (disability were significantly greater than with placebo.
  - **Joint pain:**[2163]
    - Design: Clinical trial
    - Patients: Eighteen self-selected patients with joint pain
    - Therapy: Nettle sting of Urtica dioica.
    - Results: All, except one respondent, were sure that nettles had been very helpful and several considered themselves cured.
- **ENT:**
  - **Allergic rhinitis:**[2164]

- Design: Randomized double-blind placebo-controlled clinical trial.
- Patients: Ninety-eight patients with allergic rhinitis
- Therapy: Freeze-dried preparation of Urtica dioica (stinging nettles) x 1 week
- Results: Urtica dioica was rated higher than placebo in the global assessments. Comparing daily symptom diaries information Urtica dioica was rated only slightly higher.

Pharmacy: Infusion: 2 tsp. herba/ cup; 1 cup TID to 6 times per day [1 tsp. = 0.8 g] (You may infuse overnight.)
1:2.5 fresh tincture 30% alcohol: 5 ml TID; weekly max. = 100 ml
Cook into soups
Acetract: simmer of infuse in 50% distilled vinegar and 50% water.
Decoction of radix: 4-6 g QD for BPH.

Drug Interactions:

50g stewed leaf enhanced the antiinflammatory effect of 50 mg of diclofenac by 4 times when given to 19 patients, likely through inhibition of COX and 5-LOX enzymes. [2165]

Contraindications: Brinker contraindicates the use of Urtica in pregnancy due to possible emmenagogue and abortifacient effects (empirical) and uterine stimulant action of its serotonin constituent(in vitro, animal studies). He also states to avoid use in edema due to heart disorders or kidney insufficiency due to inadequate excretion of urinary salts.[2166]

Toxicity: Hypersensitivity or allergy to Urtica may occur. The symptoms are pharyngeal constriction and aggravation of sinusitis and rhinitis. Start with low doses! The fresh leaves cause wheals due to the formic acid is the nettle hairs. This reaction is self-limited and may even be used therapeutically to produce a counter-irritant effect.

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Usnea barbata / U. plicata — Usneaceae

Common name: Old Man's Beard, Tree lichen

Habitat: Usnea is actually a lichen and grows on tree branches in wet forests throughout the N. hemisphere.

Botanical description: It appears as grey-green thin filaments that hang off of tree branches (pines, oaks, Douglas fir, apple and other fruit trees) The outer portion of each filament (cortex) is grey-green. The entire filament is round. When a main stem is gently pulled apart, a slender, white elastic cord is inside. [*Ramilina reticlata* can be confused with *Usnea barbata*, but *R. reticlata* has no inner core.] Lichens are technically not plants, but are fungus and chlorophyll-containing algae living together in inseparable symbiosis. Together, these organisms produce chemicals that neither one can produce on its own.

Part used: Whole lichen

Constituents:[2167]

- Lichen acids (polyketides): including among others usnic acid, thamnolic acid, lobaric acid, stictinic acid, evernic acid, barbatic acid, diffractaic acid, protocetraric acid, the lichen acid spectrums of the different species vary from one another.
- polysaccharides
- mucilage
- anthraquinones: endocrocin
- fatty acids, all essential amino acids, vitamins, carotene.

Pharmacology: Usnic acid gives Usnea its bitter taste and acts as an antibiotic.

Usnic acid is primarily antibiotic, especially against Gm. positive organisms such as: Streptococcus, Staphylococcus, Mycobacterium tuberculosis and other fast-growing species. *Usnea* spares the gram-negative bacteria that colonize the intestinal tract and is not bacteriocidal to Gm. negative pathogenic bacteria. In vitro, usnic acid is more effective than penicillin against Mycobacterium tuberculosis, Streptococcus and Pneumococcus. Usnic acid is thought to disrupt the cellular metabolism of bacteria, by preventing the formation of ATP from ADP or by uncoupling oxidative phosphorylation. Human cells are much less permeable to usnic acid and are therefore unaffected by it. Because *Usnea* and penicillin do not share the same mechanism of action, they may be used together to enhance the overall antibiotic effect. Usnic acid is also anti-fungal and effective against Trichomonas.

Preliminary test tube studies suggested an anti-cancer activity for usnic acid; however, this action has not been sufficient to warrant further investigation. [2168] Diffractaic acid and usnic acid were identified as the analgesic and antipyretic components of a lichen, Usnea diffracta. [2169] Besides the antibiotic properties noticed at lichens products there have been discovered the following pharmacological actions: antiinflammatory , antitumoural, immunostimulatory[2170].
The polysaccharides have demonstrated anti-tumor activity in animal studies.

Medicinal actions: antibiotic, anti-fungal, immunostimulating, demulcent

Historical Use: *Usnea* has a long history of medicinal use throughout this continent, in Europe and in Asia. It was used by many Native American tribes in the northwestern region of the United States.

Chinese herbalists have used the *U. longissima* species (Sun-Lo). In Traditional Chinese Medicine, *Usnea longissima* (Sun Lo) is considered to be cooling and slightly bitter. The alcoholic preparation is surface-acting, whereas the water extraction is internally acting. *Usnea* enters the lung, spleen and kidney meridians.

Traditional Medicinal Use: No information is available from the selected resources.

Current Medicinal Use: There is very little in the herbal literature about Usnea. Christopher Hobbs has written the most thorough review entitled: Usnea: The Herbal Antibiotic (and other medicinal lichens).

- Infectious Conditions: *Usnea* also contains polysaccharides which are immunostimulatory, which enhance the antimicrobial effect of usnic acid. Usnea is a good addition to any formula directed against an infectious process [UTI, URI, gastroenteritis, impetigo, Strep. pharyngitis, skin infections (including fungal)].
- Topical Applications: Usnea is quite useful topically and internally as an anti-fungal and anti-bacterial. The tincture is the most commonly used form of this herb, however, a decoction of *Usnea* is useful as a first aid remedy.

Current Research Review:

- Search of Medline reveled no human trials as of November 2002.

Pharmacy: All species of *Usnea* contain usnic acid, which is one of the main identified constituents. It is apparently difficult to extract this constituent, the process requiring a hot distillation. It is of note, however, that Native Americans made infusions of this lichen and enjoyed its medicinal attributes, perhaps because of the slower absorption but longer lasting effects of the water extraction. In any case, the tincture is considered the strongest preparation of *Usnea*.

Up to 10 gm/day powdered herb

Tincture 1:6 90% EtOH: sig 2-5 ml TID

External application as tincture or compress

Drug Interactions: No information is available from the selected resources.

Contraindications: No information is available from the selected resources.

Toxicity: There is the potential for toxicity, however because of the poor human cellular absorption of usnic acid, *Usnea spp.* is considered non-toxic.

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Vaccinium macrocarpon

Common name: cranberry

Habitat:

Botanical description:

Part used:

Historical use:

Energetics:

Constituents: hippuric acid

Pharmacology:
(Berberine also appears to have bacterial antiadhesive properties in the gut which may has been utilized in cystitis.)[2171]

Medicinal actions:

Medicinal uses:
According to the Textbook of Natural Medicine:[2172]

- Genitourinary Condtions: Cranberries and cranberry juice has been demostrated to be effective for treatment of urinary tract infections by numerous studies. Although many believe that the mechanism is through acidification of the urine, this is not likely the case. At least one liter of juice would need to be consumed at one siting in order to acidify the urine. The concentration of hippuric acid with this amount is inadequate to be bacteriostatic. Rather, cranberry juice reduces the ability of E. coli to adhere to the epithelium of the bladder and urethra. Blueberry also possesses a similar effect.

Current Research Review:

- **Urology**
  - **Kidney Stones:**[2173]
    - Design: Controlled clinical trial
    - Patients: Twelve healthy male subjects, 18-38 yo
    - Therapy: Blackcurrant, cranberry, or plum juice, 330 ml
    - Results: Cranberry juice decreased the urinary pH, and increased excretion of oxalic asic and relative supersaturation for uric acid. Authors concluded that cranberry juice acidifies urine, and therefore can be useful in the treatment of brushite and struvite stones as well as UTI.
  - **UTI**[2174]
    - Design: Open randomized controlled clinical trial
    - Patients: One hundred fifty women with UTI caused by E. coli.
    - Therapy: Cranberry-lingonberry juice concentrate, 50 ml qd x 6 months or 100 ml of lactobacillus drink 5 x/week
    - Results: At six months, eight (16%) women in the cranberry group, 19 (39%) in the lactobacillus group, and 18 (36%) in the control group had had at least one recurrence. This is a 20% reduction in absolute risk in the cranberry group compared with the control group. It was concluded that regular drinking of cranberry juice seems to reduce the recurrence of urinary tract infection
  - **Bacterial biofilm load in the bladder:**[2175]
    - Design: Clinical trial
    - Patients: Fifteen spinal cord injured patients
    - Therapy: Cranberry juice, 1 glass TID. Water as a control
    - Results: Cranberry juice intake significantly reduced the biofilm load compared to baseline. This was due to a reduction in adhesion of Gram negative and Gram positive bacteria to cells. Water intake did not significantly reduce the bacterial adhesion or biofilm presence.
  - **Bacteriuria/pyuria**
    Study 1:[2176]
    - Design: Double-blind placebo-controlled crossover clinical trial.
    - Patients: Fifteen children with neurogenic bladder receiving clean intermittent catheterization

- Therapy: Cranberry concentrate or placebo concentrate for 6 months (3 months receiving one concentrate, followed by 3 months of the other).
- Results: During consumption of cranberry concentrate, the frequency of bacteriuria remained high. Cultures of 75% (114 of 151) of the 151 samples obtained during consumption of placebo were positive for a pathogen compared with 75% (120 of 160) of the 160 samples obtained during consumption of cranberry concentrate. E. coli remained the most common pathogen during placebo and cranberry periods. Three symptomatic infections each occurred during the placebo and cranberry periods. No significant difference was observed in the acidification of urine in the placebo group versus the cranberry group (median, 5.5 and 6.0, respectively). The frequency of bacteriuria in patients with neurogenic bladder receiving intermittent catheterization is 70%; cranberry concentrate had no effect on bacteriuria in this population.

Study 2:[2177]

- Design: Randomized controlled clinical trial
- Patients: Elderly women
- Therapy: Cranberry juice cocktail, 300 ml qd x 6 mo
- Results: Bacteriuria and pyuria can be reduced by 50%. Consumption of cranberry juice is more effective in treating than preventing bacteriuria and pyuria.

Study 3:[2178]

- Design: Randomized double-blind placebo-controlled clinical trial.
- Patients: Volunteer sample of 153 elderly women (mean age, 78.5 years).
- Therapy: Cranberry beverage, 300 ml qd or a specially prepared synthetic placebo drink that was indistinguishable in taste, appearance, and vitamin C content but lacked cranberry content.
- Results: The odds of bacteriuria with pyuria in experimental group were only 42% of the odds in the control group. Their odds of remaining bacteriuric-pyuric, given that they were bacteriuric-pyuric in the previous month, were only 27% of the odds in the control group. It was concluded that the use of a cranberry beverage reduces the frequency of bacteriuria with pyuria in older women.

- **Uropathogen adhesion:**[2179]
  - Design: Clinical trial
  - Patients: Volunteers
  - Therapy: Water, ascorbic acid, or cranberry supplements
  - Results: Only ascorbic acid intake consistently produced acidic urine. Cranberry and water produced urine with higher surface tensions. Urine obtained after cranberry and ascorbic acid supplementation reduced the intial deposition rates and numbers of adherent E. coli and Enterococcus faecalis, but not Pseudomonas aeruginosa, Staphylococcus epidermidis, or Candida albicans. Conversely, urine obtained from subjects with increased water intake vastly increased the initial deposition rates and numbers of adherent E. coli and E. faecalis.
- **Urostomy:**[2180]
  - Design: Clinical trial
  - Patients: Thirteen urostomy patients
  - Therapy: Cranberry juice, 160-320 g qd x 6 mo
  - Results: Improvement in skin condition from 6 patients with erythema, maceration or pseudoepithelial hyperplasia at the beginning of the study to 2 patients with maceration or PEH. The average pH of the urine taken from the patients' pouches decreased a statistically significant amount from 8.0 to 7.3, yet unexpectantly, the average pH of the fresh urine increased a statistically significant amount from 5.8 to 6.2. The authors conclude that while drinking cranberry juice did not appear to acidify the urine as expected, improvements were still seen in the skin conditions of the study participants, suggesting that drinking cranberry juice does positively impact the incidence of skin complications for these patients.
- **Urinary pH**[2181]
  - Design: Randomized controlled clinical trial
  - Patients: Twenty-one female and 19 male subjects who had normal physical and laboratory examinations
  - Therapy: Cranberry juice, 150, 180, 210, or 240 mL, cc x 12 days
  - Results: There were significant differences in mean urinary pH between each control group and its corresponding experimental group.

- **Dentistry:**
  - **Bacterial adhesion:**[2182]
    - Design: Clinical trial
    - Patients: Not stated in the abstract
    - Therapy: High molecular weight nondialysable material (NDM) isolated from cranberry juice, concentration 0.6-2.5 mg/ml
    - Results: In the clinical trial, NDM reduced S. mutans counts in saliva. It was concluded that anti-adhesion activity of cranberry juice has a potential for altering the oral microbial flora resulting in improved oral hygiene.

- **Biochemistry**
  - **Anti-oxidant capacity:**[2183]
    - Design: Controlled clinical trial
    - Patients: Nine female volunteers
    - Therapy: 500 ml blueberry juice, cranberry juice or a sucrose solution post overnight fast.
    - Results: Consumption of cranberry juice resulted in a significant increase in the ability of plasma to reduce potassium nitrosodisulphonate and Fe(III)-2,4, 6-Tri(2-pyridyl)-s-triazine, these measures of antioxidant capacity attaining a maximum after 60-120 min. This corresponded to a 30% increase in vitamin C and a small but significant increase in total phenols in plasma. The authors concluded that increase in plasma antioxidant capacity following consumption of cranberry juice could mainly be accounted for by an increase in vitamin C rather than phenolics
- **Gastroenterology:**
  - **Hypochlorhydria:**[2184]
    - Design: Randomized controlled clinical trial
    - Patients: Nineteen elderly patients: with hypochlorhydria d/t omeprazole treatment, with atrophic gastritis, or normal.
    - Therapy: Water, cranberry juice or 0.1N hydrochloric acid taken with protein bound vitamin B12.
    - Results: With cranberry juice ingestion, the omeprazole-treated group showed an increase in absorbed protein-bound vitamin B12. With dilute hydrochloric acid ingestion, there was a further increase in vitamin B12 absorption. The conclusion was that omeprazole causes protein-bound vitamin B12 malabsorption, and ingestion of an acidic drink improves protein-bound vitamin B12 absorption.

Pharmacy: juice: 0.5 L/day (It is important to note that this needs to be pure cranberry juice that is sugar free. Fresh cranberry (or blueberry juice can be sweetened with a small amount of apple or grape juice.)
standardized extract.

Contraindications: Cranberry is well tolerated having no known contraindications or toxicities.

Toxicity: none.

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Vaccinium myrtillus

Ericaceae (Vacciniaceae)

Common name: bilberry, huckleberry, European blueberry, whortleberry, blueberry

Habitat:

Botanical description:

Part used: berry, leaf, flowers

Historical use:

Energetics:

Constituents:

- flavonoids: anthocyanosides (0.1-0.25%)[2185] , catechin, epicatechin, oligomeric proanthocyanidins (OPCs are also found in Crataegus, grape seed and pine bark)
- tannin (7% to 20%)[2186,2187]
- Iridoid monoterpenes: asperuloside, monotropein
- Caffeic acid derivatives: chlorogenic acid
- Phenolic acids: including, among others, salicylic acid, gentisic acid
- Quinolizidine alkaloids: myrtine, epimyrtine

Pharmacology: According to Murray and Pizzorno, pharmacokinetic studies demonstrate tropism for the skin, kidneys and the eyes. Anthocyanidins are excreted through the kidney.

- Stablization of Collagen by cross linking fibers, preventing free radical damage, inhibiting enzymatic cleavage from leukocytic enzymes during inflammation, promoting mucopolysaccharide and collagen biosynthesis, stimulating reticulation of collagen fibrils.
- Anti-inflammatory: preventing release/synthesis of inflammatory compounds
- Normalization of Capillary Permeability: by stabilizing membrane phospholipids and increasing endothelium integrity, increasing the biosynthesis of mucopolysaccharides of CT ground substance thus restoring altered MPS pericapillary sheath.: ↓ perm of BBB.
- Anti-Aggregation of Platelets
- Smooth Muscle Relaxation: preliminary study in dysmenorrhea has been

Anthocyanosides have strong "vitamin P" activity. Included in their effects are an ability to increase intracellular vitamin C levels and to decrease capillary permeability and fragility. Their effect in reducing capillary fragility and permeability is roughly twice that of rutin, in both intensity and duration of action.

Medical actions: astringent (leaf), antiseptic, absorptive, antiemetic, antidiarrheic

Traditional Medicinal Uses:

King described the dark berry varieties of Vaccinium together as diuretic and astringent having been used in scurvy, dysentery, and derangements of the urinary organs. The berries and roots, bruised and steeped in gin, form an excellent diuretic, which has proved of much benefit in edema and gravel. A decoction of the leaves or bark of the root is astringent, and may be used in diarrhea, or as a local application to ulcers, leucorrhoea, and ulcerations of the mouth and throat.

Cook described V. resinosum (huckleberry) with similar properties as those ascribed by King.

Current Medical Uses:

Leaves are used in indications requiring astringency and in vascular disorders, especially of lower extremity.

- Behavioral and Psychological Conditions: Experimental studies indicate that Vaccinium may be useful in the treatment of schizophrenia.

- Cardiovascular Conditions: [2188, 2189] Uncontrolled trials dating back to 1964 demonstrated the efficacy of Bilberry in the treatment of peripheral vascular disorders. In later trials, Bilberry extract (equivalent to 86-173 mg anthocyanins per day) improved edema and subjective symptoms of lower limb varicose syndrome, reduced protein exudate of varicose ulcers and decreased the total drainage time after reactive hyperemia in chronic venous insufficiency.

  Bilberry extract (57-115 mg anthocyanins per day for 2-3 months) provided relief for venous disorders including hemorrhoids during pregnancy.

  A review of uncontrolled trials from 1979 to 1985 on a total of 568 patients with venous insufficiency of the lower limbs concluded that Bilberry extract caused rapid disappearance of symptoms and improvements in venous microcirculation and lymph drainage. Bilberry extract (equivalent to 173 mg anthocyanins per day) or placebo was administered for 30 days in a single-blind, placebo-controlled clinical trial on 60 patients with venous insufficiency. Significant reduction in the severity of symptoms (edema, sensation of pain, paraesthesia, cramping pain) was observed for the treated group after 4 weeks treatment ($p<0.01$). In a double-blind, placebo-controlled trial, 47 patients with peripheral vascular disorders of various origins were treated with Bilberry extract (equivalent to 173 mg anthocyanins per day) or placebo for 30 days. The treated group experienced a reduction in subjective symptoms including paraesthesia, pain, heaviness, and edema.

  In uncontrolled trials, Bilberry extract (equivalent to 57-288 mg anthocyanins per day) improved symptoms caused by decreased capillary resistance (petechiae, bruising and fecal occult blood), reduced the microcirculatory changes induced by cortisone therapy in patients with asthma and chronic bronchitis and improved diabetic retinopathy with a marked reduction or even disappearance of retinic hemorrhages.

  Postoperative complications from surgery of the nose were reduced in patients who received Bilberry extract (equivalent to 115 mg anthocyanins per day) administered for 7 days before and 10 days after surgery.

- Endocrine Conditions: The decoction of the leaves appears to have a hypoglycemic effect. The collagen strengthening effects and inhibition of sorbitol formation protects vasculature from diabetic complications. [2190]

- Gastrointestinal Conditions: [2191] The anthocyanidins give action to the berries in the treatment of diarrhea as a frequently administered decoction. Bilberry tea or unsweetened juice combined with quark (soft white cheese) is effective in diarrhea and dysentery. The unsweetened juice must be used to avoid the affects of sugar on the digestive tract. In infants, powdered berry suspended in water or tea and simmered lightly is a useful remedy for dyspepsia and diarrhea.

  On the contrary, when the ripe berries are eaten in large quantity the effect is laxative in nature as the astringent nature is overwhelmed. The fiber from the skin, irritant effect of the pips and fruit acid create a roughage effect that is beneficial in chronic constipation.

  Vaccinium soothes inflammation which may also accompany chronic constipation. Anthocyanidins may have a bacteriostatic effect as well. Other indications include nausea and vomiting as well as "the dystrophic and trophic states (of the intestine) which are difficult to treat." The astringent and disinfectant properties make it useful for inflammatory conditions of the oral cavity.

- Genitourinary Conditions: : Vaccinium also has a tropism for the skin and kidneys, two excretory organs which are high in collagen and mucopolysaccarhides which are nourished by Vaccinium.

- Metabolic Conditions: Vaccinium reduces serum cholesterol and triglyceride levels in primary dyslipidemia. Vaccinium may prevent arteriosclerotic plaque formation as w ell. [2192]

- Ophthalmological conditions: Initial observations of the effect of Vaccinium demonstrated improved night vision, quicker adjustment to darkness and faster restoration of visual acuity after glare exposure. The anthocyanosides have a tropism for the pigmented epithelium of the retina. Vaccinium is indicated in visual disturbances/poor vision including pigmentary retinitis and hemeralopia. [2193]

  Given the effects on the collagen structure of the eye, Vaccinium is used in the prevention and treatment of glaucoma. The integrity collagen of the vasculature of the eye is improved as well. Sorbitol production is inhibited in the eye decreasing cataracts, retinal degeneration, and diabetic retinopathy.

  In uncontrolled trials conducted as early as 1964, Bilberry extract (including isolated anthocyanins), alone or in combination with beta-carotene and retinol, improved vision in healthy subjects and in patients with visual disorders such as myopia. Enlargement of visual range was observed for patients with pigmentary retinitis and retinal sensitivity was improved in patients with hemeralopia (defective vision in bright light). Visual perception improved in 76 of myopic patients receiving Bilberry extract (equivalent to 54 mg anthocyanins per day) and retinol for 15 days. Similar results were obtained for patients with simple glaucoma. Bilberry extract (equivalent to 115 mg anthocyanins per day) for 90 days improved darkness adaptation in all myopic patients and improved day vision in those suffering from light to medium myopia.[2194,2195]

  In a placebo-controlled trial, Bilberry extract (equivalent to 115 mg anthocyanins per day for 12 months) improved early-phase diabetic retinopathy as indicated by a reduction of hard exudate at the posterior pole. In a double-blind, placebo-controlled clinical trial, 14 patients with diabetic and/or hypertensive retinopathy received Bilberry extract (equivalent to 115 mg anthocyanins per day) or placebo for 1 month. Significant improvements in the ophthalmoscopic and angiographic patterns were observed in 77-90 of treated patients.[2196,2197]

- Rheumatological Conditions: The antioxidant effects make Vaccinium useful in gout and rheumatoid arthritis as collagen synthesis is increased and collagen breakdown is inhibited. In gout, uric acid levels and tissue destruction are reduced. Mobilization of finger joints was improved in patients with Raynaud's syndrome.

Pharmacy: Standardized extract (25% anthocyanosides): 80-160 mg tid
Fresh berries 2-4 oz. tid
diarrhea preparations:
in infants simmer 150-200 mg/kg sifted powdered berry as a 5% suspension
in older children make a 10-20% suspension with 15% rice flour as a stabilizer
decoction, as a mouthwash or tea: simmer 3 T in ½ Liter of water for 10 min., drink throughout the day

Drug Interactions:[2198]

- May protect against ulcer formation induced by phenylbutazone, indomethacin, reserpine, ethanol and acetic acid (animal studies).
- Antiplatelet medications: activity may be enhanced by the platelet aggregation inhibiting effect of the anthocyanosides.

Contraindications: V. myrtillus is contraindicated in hemorrhagic disorders.

Toxicity: Nontoxic. No other information is provided by the selected resources.

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Valeriana officinalis/ V. sitchensis

Valerianaceae

Common name: Valerian

Habitat: Valerian is native to Europe and Asia and has been naturalized in North America. It grows wild in woodlands, along river banks and in damp meadows. Valeriana sitchensis grows at a higher altitude

Botanical description: A 30-150 cm tall herb. A single stem has pinnate leaves. The stem ends in a terminal cyme of white or pink flowers which bloom June through September. The rhizome is ovoid-cylindrical and bears multiple roots. The roots are light to medium greyish brown, 1-3 mm thick, and are covered with coarse longitudinal furrows.

Parts used: Root

Constituents [2199]

- Valepotriates (Valeriana-epoxy-triacylates, iridoid monoterpenes, 0.2-2.0%): chief components (50-80%) , isovaltrate (up to 46%), isovaleroxyhydroxy didrovaltrate (IVDH-valtrate, 10-20%), including, among others, didrovaltrate, acevaltrate
- Volatile oil (0.2-1.0%): chief components (-)-bornyl isovalerenate and isovalerenic acid (both aroma-carriers), including, among others, (-)-bornyl acetate, isoeugenyl valerenate, isoeugenyl isovalerenate, also with some strains valerenal, valeranone, cryptofaurinol
- Sesquiterpenes: valerenic acid (0.1-0.9%), 2-hydroxyvalerenic acid, 2-acetoxy-valerenic acid
- Pyridine alkaloids (traces, cat pheromone): actinidine, Valerianine, alpha-methylpyrrylketone
- Caffeic acid derivatives: chlorogenic acid.

Pharmacology: Research done in the 1980's confirmed the use of Valerian in the treatment of insomnia, but the mechanism was unknown. In 1989, German researchers discovered that the volatile oils, particularly valerenic acid, bind to GABA-A receptors leading to the release of γ-aminobutyric acid (GABA) which in turn inhibits the release of other neurotransmitters. These volatile oils also inhibit the degradation of GABA.[2200,2201] The net effect is sedation of the central nervous system (CNS). Benzodiazapines (i.e. Valium, Halcion, Xanax) also bind to GABA-A, however Valerian binds more weakly to these receptors. Because of this weak binding, Valerian causes sedation without addiction and without the lethargy and grogginess associated with benzodiazepine.

Upon processing, particularly through drying and oxidation, valepotriates are formed. Valepotriates are not present in the crude plant or in tincture or decoction. Valepotriates possess cytotoxic and antitumor actions in vitro but have not been demonstrated to do so in humans. Valepotriates are also both stimulating and sedating to the autonomic nervous system leading to an overall amphoteric effect.[2202,2203]

Valerenic acid is spasmolytic and has muscle relaxing effects on smooth and skeletal muscles.[2204]

A remarkable aspect of Valerian is the no single uniform active constituent is responsible for the effects of Valerian. Rather, the therapeutic effect depends on the interaction of a number of principles as demonstrated in experimental studies: the sedative effect is due mainly to the volatile oil and valeric acid; the depressant effect on the autonomic nervous system is due to the valepotriate content.[2205]

Medicinal actions: hypnotic, nervine, hypotensive, antispasmodic, carminative, sedative (paradoxical stimulant)

Historical Use: Valerian has been used historically throughout Europe to treat digestive problems, nausea, liver problems, anxiety and insomnia. In fact this cluster of symptoms was referred to as hysteria, and in women, often led to the removal of their uterus (hence "hysterectomy").

Traditional Medicinal Use:

Specific Indications and Uses: A cerebral stimulant. Hysteria, chorea, hemicrania, all with mental depression and despondency; cerebral anemia; mild spasmodic movements.[2206]

Cook described Valerian root as largely relaxant, moderately stimulant and somewhat diffusive. He noted that when using Valerian, the pulse becomes fuller and softer and its repeated administration will impart the Valerianic odor to the breath. Valerian was considered to have enough stimulating power to make it suitable in moderately depressed conditions and as a good adjunct to diffusive stimulants and light tonics. [2207]

King stated that the cases indicating Valeriana are those evidencing enfeebled cerebral circulation where there is despondency and marked mental depression. He further remarked that the failure of Valerian to favorably impact a condition is likely due to administration without due regard to the indications and the condition of the nerve centers.

- Gastrointestinal Conditions: impregnating the juices and eructations of the stomach for many hours;
- Gynecological Conditions: Cook combines Valeriana with Liriodendron, Zanthoxylum, Pimpinella and Caulophyllum for uterine neuralgia, dysmenorrhea and any gynecological condition accompanied by feebleness and poor circulation.
- Nervous Conditions: Valerians principle influence in on the nervous system: first, the periphery where its action is as a nervine and antispasmodic in cases of irritability, restlessness and acute nervousness. Secondly, it affects the brain inducing quietude and sleep. Sleep induced by Valerian is natural and accompanied by a gentle, warm perspiration leaving no morbid impression after it has worn off.

  Valerian is adapted to the milder spasmodic affections where its effect is much more significant if applied in the prodromal hyperaesthetic state than when spasm has taken place.Valerian was used in treatment of convulsion in infants, epilepsy, chorea (combined with Cimicifuga) and delirium tremens, headache of a neurologic origin.
- Inflammatory Conditions: in the low forms of fever, where a nervous stimulant is required.

Current Medicinal Use:

- Behavioral and Psychological Conditions: Forty-eight participants were placed under situations of stress in a double-blind study of Valerian. Individuals in the Valerian group reported less anxiety. [2208] One study also found evidence that Valerian helps reduce reactions to stressful situations; this study lacked a placebo group. [2209]
- Gastrointestinal Conditions: Valerian is a bitter, antispasmodic and carminative for the digestive organs.
- Musculoskeletal Conditions: The muscle relaxing effect of Valerian makes it useful in individuals with anxiety and that hold their tension in their muscles. Valerian is also a good addition to external massage compounds.
- Nervous Conditions: Valerian is mainly indicated for nervous excitement, nervous sleeplessness and nervous palpitations. For nervous excitement, Valerian combines well with Melissa, with Humulus for nervous sleeplessness and Convallaria for nervous palpitation.

  Currently, Valerian is used as a sedative. It is most effective for nervous excitement, nervous sleeplessness and nervous palpitations. Valerian is useful for individuals with restlessness and insomnia, which is aggravated by anxiety. Valerian will improve the quality of sleep, reduce the time it takes to fall asleep, will not cause somnolence in the morning, nor will it affect dream recall.[2210,2211] Valerian is not physiologically addicting and is a good herb to use in the place of benzodiazepine sleep medications. When used in amounts below that which will cause somnolence, Valerian may be used throughout the day to relieve anxiety.

  An impressive study of Valerian's effectiveness in treating insomnia involved 121 people over 28 days. Half of the participants took 600 mg of an alcohol-based Valerian extract 1 hour before bedtime, the other half placebo. By the end of the study, the participants treated with Valerian were definitely sleeping better. Another trial followed 128 subjects who had no sleeping problems. On three consecutive nights they took Valerian, a Valerian-hops combination, or placebo. The results showed that on the nights they took Valerian alone, participants fell asleep faster than when they were taking placebo or the combination. Additional evidence for Valerian's effectiveness comes from a double-blind placebo-controlled study of 78 elderly patients. In this case, sleep improved by the end of the study, at 14 days. In addition, a 28-day double-blind trial of 75 individuals with insomnia compared Valerian (600 mg at bedtime) with the standard drug oxazepam (10 mg at bedtime). The results showed no differences in effectiveness. A double-blind comparative study that enrolled 46 patients compared the effects of the standard drug bromazepam to a mixture of Valerian and hops with either treatment taken one-half hour before bed. The results suggest that the two treatments were equally effective. Finally, the combination of Valerian and lemon balm has been tried for insomnia. A 30-day double-blind placebo-controlled study of 98 individuals without insomnia found that a Valerian–lemon balm combination improved sleep quality as compared to placebo. Similarly, a double-blind crossover study of 20 people with insomnia compared the benefits of the sleeping drug Halcion (0.125 mg) against placebo and a combination of Valerian and lemon balm, and found them equally effective. [2212, 2213, 2214]

According to Moore (Plants of the Pacific West), Valerian is indicated in an over active mind- check off list in the head may cause bad dreams with a groggy awakening; stimulant to digestion, lungs, cardiac output. If you are an adrenal driven person, it is a tonic sedative. If you are an adrenocortical stressed person, you will be sedation and physical stimulation.

Pharmacy: Weiss remarks that in order for Valerian to be effective it requires a sufficiently high dosage. Also, preparations from dried root must be used to access the autonomic amphoteric effect of the valepotriates.

Crude herb: 0.3-1.0 gm daily as powdered herb; 3-5 gm [1 tsp. = 2.5 gm] daily in decoction, cold maceration (soak for 8–10 hours so set it up in the morning), or infusion/maceration (left to stand 12 hours). Drink cold.

dried root capsules standardized to 0.2%-0.8% valerenic acids: 300-500 mg for sedation at bedtime, 150-300 mg for mild anxiety daily

5-10 ml of 1:5 tincture for sedation; 2.5 ml of 1:5 tincture BID to TID for mild anxiety

Drug Interactions:[2215]

- Benzodiazepines: Valerian products containing valepotriates appear helpful in benzodiazepene withdrawal.
- Barbiturates: may potentiate the effects barbiturates and therefore, concomitant use should be avoided.

- Sedatives: may potentiate the effects of alpha-blockers, anesthetics, analgeiscs, tricyclic antidepressants, antiemetics, antiepileptics, beta-blockers and hypnotics.

Contraindications: Some individuals will paradoxically to Valerian and will actually be stimulated by it. Valerian excites the cerebro-spinal system. Large doses cause headache, mental excitement, visual illusions, giddiness, restlessness, agitation, and even spasmodic movements, and frequently nausea.[2216] This reaction may be due to the a heightened sensitivity on their part to the valepotriates.

Valerian is high in arginine and should be avoid in Herpes simplex outbreaks.

Toxicity: There is no known or reported toxicity with the use of Valerian. Valerian is safe during pregnancy and lactation. Valerian carries no risk of habituation or dependence and does not negatively affect concentration

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Veratrum spp.(V. album, V. viridie, V. californicum)

Liliaceae

Common name:

Habitat:

Botanical description:

Part used:

Historical use:

Energetics:

Constituents:

Pharmacology:

Medical actions:

Medical uses:

Pharmacy:

Toxicity:

Verbascum thapsus

Scrophulariaceae

Common name: Mullein

Habitat: Worldwide in all temperate zones. It grows in wastelands, by roadsides, in meadows-- wherever the soil is gravelly or sandy.

Botanical description: A biannual root with an erect, nonbranching, wooly stem growing 3-6 ft. in height. The basal leaves are large, some up to a foot long, oval rounded at the apex and wooly. The stem leaves are alternate, decreasing in size as they grow up the stem. These leaves are also wooly and are grey-green in color. Bright yellow flowers bloom between July and August and are sessile in a raceme along the upper part of the stem. The first year plant is a basal rosette of leaves. The second year plant elongates with a tall stem with flowers.

Parts used: Folia and floris

Historical use: The use of Mullein throughout history is varied and extensive. It has been used to start fires, to ward off evil spirits (Europe and Asia), and for coughs in animals and humans. Native Americans learned about the use of Mullein from the early settlers and employed as a remedy for coughs. They would smoke the rolled leaves or boil it with molasses to make a syrup.

Constituents:

- Mucilage (leaves: 3%): including, among others, arabino galactans, xyloglucans
- Triterpene saponins (leaves): chief components verbascosaponine
- Iridoid monoterpenes: including, among others, aucubin, 6beta-xylosylaucubin, catalpol
- Caffeic acid derivatives: verbascoside (acteoside)
- Flavonoids (0.5-4.0%): acubin, apigenin-7-O-glucosides, kaempferol-7-O-glucosides, rutin digiprolactone
- Volatile oil (flowers), Tannins, Resins (flowers), Bitters

Pharmacology

The mucilaginous constituents are primarily responsible for the soothing actions on mucous membranes. The saponins may be responsible for the expectorant actions of mullein by their ability to loosen mucus.[22172218]

Medicinal actions: Demulcent, emollient, expectorant, vulnerary, mildly antispasmodic and relaxing.

Traditional Medicinal Use:

Specific Indications and Uses.—To quiet nervous irritation, bronchial irritation and cough, and urinary irritation with painful micturition.

King described Verbascum as mildly nervine, controlling irritation, and favoring sleep. The seeds are narcotic, and have been used in asthma, infantile convulsions, and to poison fish.[2219]

- ENT Conditions: The flowers, placed in a well-corked bottle, and exposed to the action of the sun, are said to yield an excellent relaxing oil. This oil is also valuable in some cases of deafness, used locally for its effect upon the membrane tympani, and upon the secretion of cerumen.
- Gastrointestinal Conditions: The leaves have been used internally for bowel complaints and an infusion was a deservedly popular remedy in sub-acute dysentery and diarrhea, probably from their action on the lacteals. The seeds, it was said, will rapidly pass through the intestines, having been used in intestinal obstructions.
- Genitourinary Conditions: The oil was reputed to be an effective treatment for nocturnal enuresis and in vesical irritation caused by alkaline urine; painful micturition, in lithemia, chronic cystitis, and urinary calculus.
- Pulmonary Conditions: Upon the upper portion of the respiratory tract its influence is pronounced, particularly where the larynx and trachea are involved. The infusion is useful in coughs, protracted colds, catarrh, hemoptysis, diarrhoea, dysentery, and piles. It is applicable to dry, hoarse coughs, which occur chiefly at night, as well as to cough associated with an abundant catarrhal discharge. Its diuretic properties are rather weak, yet it is very useful in allaying the acridity of urine, which is present in many diseases.
- Topical Applications: A fomentation of the leaves also forms an excellent local application for inflamed piles, ulcers, and tumors. The leaves and pith of the stalk form a valuable cataplasm in white swellings, and when infused in hot vinegar or water it makes an excellent poultice to be applied to the throat in tonsillitis, malignant sore throat, and mumps.

Cook particularly called attention the peculiar and reliable power of the leaves over the “absorbent system”, for he considered their power in promoting absorption in cellular dropsy, chronic abscesses, pleuritic effusions, and similar accumulations of fluid, truly remarkable. He used them for similar purpose in synovial dropsy, and scrofulous and other swellings.[2220]

Current Medicinal Use:

Verbascum flowers are used primarily for their sedative, antiseptic, anodyne and anti-spasmodic properties. However, there has not been very much scientific investigation into this popular herb.

- ENT Conditions: Mullein essence, or Mullein oil is used with great success for earaches, ulcerations of the ear, deafness, and serous otitis and otitis media. Mullein essence maximizes the vulnerary properties of the flower. For earaches, some or all of the following herbs could be combined with Verbascum (vulnerary, antiinflammatory, antispasmodic): Hypericum (anti-viral, vulnerary, antiinflammatory): Allium sativa (antimicrobial): Matricaria (antiinflammatory, antimicrobial, antispasmodic): Lobelia (antispasmodic): Aconite (analgesic): Ephedra (dilates the E. tube).
- Genitourinary Conditions: Verbascum root is useful in the treatment of cystitis, nocturnal enuresis, incontinence, and testicular inflammation, Verbascum root tonifies the trigone area of the pelvis. Verbascum also allays inflammation and irritation of the urinary system. Urinary incontinence may resolve with one drop of the oil taken internally several times daily.
- Pulmonary Conditions: The first or early second year leaves are used for respiratory conditions. Verbascum leaves are expectorant and somewhat anti-spasmodic. These actions are due primarily to the saponins which, like detergent, draw fluid from the tissues, thereby creating a thinner mucous that is easier to expectorate. For this reason, Mullein is indicated in dry, hoarse coughs or wet, productive coughs with thick expectorate.

The acubin flavonoid glycosides and mucilage, which are both anti-inflammatory, reduce copious mucous production (i.e. in asthma). Verbascum combines the stimulating expectorant action of the saponins with the soothing and relaxing action of the mucilage and aucubin glycoside. When combined with Lobelia, Verbascum is very anti-spasmodic. Verbascum is very useful in the treatment of asthma and URIs not only for its expectorant, antiseptic (volatile oils), anti-spasmodic (volatile oils), and anti-inflammatory effects, but Verbascum also addresses the emotional component of these conditions.

Verbascum seems to allay the anxiety associated with URIs and asthma. Verbascum can be used in combination with other herbs as a tincture, or the leaves may be burned as incense or smoked. Incense of Mullein and Eriodictyon is a good prophylactic for asthma.

- Topical Applications: Topically, Mullein leaves may be steamed and applied to areas of muscle spasms (i.e. whiplash) and painful joints. Verbascum oil is also useful when applied topically for testicular inflammation.

Pharmacy: Infusion 1-2 tsp./cup water; sig 1-2 cups TID
Tincture 1:5 25% EtOH; sig 4-6 ml TID
Fluid extract 1:1 25% EtOH; sig 2-4 ml TID
Poultice, external wash, incense, oil

The essence can be made by cutting off the stalk with the flowers and hanging it upside down in a wine bottle. For 2-3 days, the bottle is placed in the sunlight during the day and stored in a cool place at night. The essence (vehicle = oil) drips to the bottom of the bottle. Mullein essence and fresh plantain juice is an excellent remedy for all manner of earaches. If the Verbascum oil is used, it is most effective if heated first.

Contraindications: Cook considered topical application of Verbascum to be improper on carbuncles, buboes, cancers, and other swellings from which it would be injurious to have a deposit absorbed.[2221]

Toxicity: No known toxicity

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Verbena officinalis/V. hastota /V. urticfollia

Verbenaceae

Common name: Vervain (blue Verbena: V. hastota), stiff neck remedy

Habitat:

Botanical description: A perennial herb up to 70 cm in height. The stem is woody at the base. The sesile to short-petioled leaves are opposite. Each leaf is coarsely incised with crenate lobes. The flowers have a 4-5 part calyx and a pale lilac corolla and occur in 10-25 cm long spikes. In V. officinalis, the leaves are dryer and wider than V. hastata

Parts used: Herba (esp. flora), radix

Identified Constituents:

- Iridoid glycosides (0.2%-0.5%): verbenalin, hastatoside, verbanaline
- Caffeic acid derivatives: verabscoside
- volatile oil; mucilage; bitter substances (inc. verbenalol); tannins; alkaloid

Pharmacology: The iridoids have been tested in animals and have been shown to exert antiphlogistic, analgesic, and weak parasympathomimetic activities. Verbenalin possesses anti-tussive activity.[2222]

Verbena acts as a synergist to prostaglandin E2 and therefore research into its use as an agent to induce abortion has been suggested.[2223]

Vervain extracts are antithyrotropic. This action appears to derive from some interaction between certain constituents, which attach themselves to the TSH receptor or combine with TSH.[2224]

Medicinal actions: Parasympathomimetic, anti-spasmodic, mild analgesic, nervous system tonic, bitter, emmenagogue, reproductive organ tonic, bitter, hepatic stimulant, diuretic, galactagogue

Traditional Medicinal Use:

Cook described the roots and leaves as relaxant tonics, closely resembling the leaves of E. perfoliatum, but a little more stimulating. A warm infusion of Verbena was observed to promote diaphoresis, laxity of the bowels, and is emetic if used in excess. Verbena was sometimes used in colds, bilious remitting fever, and delay of the menses. A cold infusion is a good tonic and mild laxative; and a free use of a concentrated decoction many times will open and sustain the liver and gall-ducts so effectually as to cure intermittents. It has also been used for worms, where its action is similar to chelone. This article is nearly overlooked by the profession, but deserves decided attention.

King

Vervain is tonic, emetic, expectorant, and sudorific. In small doses, a tincture of verbena relieves gastric irritation. As an emetic and sudorific it has proved beneficial in intermittent fever, given in warm infusion or in powder. In all cases of colds and obstructed menstruation, it may be used as a sudorific. Taken cold, the infusion forms a good tonic in some cases of debility, anorexia, and during convalescence from acute diseases. It has been reputed valuable in scrofula, visceral obstructions, gravel, and worms. The following application has been recommended as effectual in promoting the absorption of the blood effused in bruises, and in allaying the attendant pain: Take of Verbena, Senna, and white pepper, of each, equal parts. Make a cataplasm by mixing with the white of eggs.

Current Medicinal Use:

Verbena has diverse indications and should be thought of primarily as a tonic herb. Tonic herbs in general are indicated in convalescence, debilitating conditions with or without anorexia and chronic fatigue syndrome. [2225]

Verbena increases the insight. Bach indicated Verbena for those with an intense attitude toward life, strong willed, enthusiastic, unable to relax, mental/physical exertion, good ideas but not able to hold on to them, constipation, muscle spasm…. Verbena is said to deepen one's understanding of the world and to aid in meditation. It is useful in irritated, depressed states and acts to lift one's spirit and one's energy. Dr. Mary Bove will have pregnant couples who do not get along drink the tea together. It is cool and nourishing and is specific for the neck (compared to Stachys).

- Dermatologic Conditions: Verbena may be used externally to speed the healing of wounds, sores and burns.
- Gastrointestinal Conditions: The bitter constituents in Verbena make it a digestive tonic. With continued use of Verbena, there is increased secretion of saliva, HCl, pancreatic enzymes, increased bile secretion and gall bladder contractility, and increased intestinal motility.
- Genitourinary Conditions: Verbena is also employed as a diuretic when there is kidney and lower urinary tract weakness, especially when it is contributing to arthritis and/or edema. Verbena has demonstrated moderate solvent action on uric stones which was linked to the alkalinizing capacity of the infusion as well as possible urinary antiseptic activity.[2226]
- Gynecologic Conditions: It is a reproductive organ tonic. The verbenaline glycoside and alkaloids increase uterine muscle

tone and thus strengthen the uterus. Uterine contractions become more regular. Verbena will thus bring on menses delayed due to pelvic congestion and uterine weakness. This effect is also the result of the choleretic effects of Verbena (see below). Verbena is a good tonic to use in pregnancy (third trimester only)and in women with dysmenorrhea because of its ability to decrease muscle spasticity while increasing muscle tone.

Verbena can also be used as a galactagogue in breast-feeding women and the nervous tonic use is used for postnatal depression (see Vitex)

- Hepatic Conditions: Verbena is a mild choleretic and hepatic stimulant.
- Nervous Conditions: Verbena is both a trophorestorative and tonic. In regard to tonic herbs in general they are indicated in convalescence, debilitating conditions with or without anorexia and chronic fatigue syndrome. As a nervous trophorestorative, it can be used in cases of nervous exhaustion, neuralgia, herpes infections, depressive states and insomnia marked by waking up in the early hours of the morning after falling asleep easily. Other applications include convalescence and neurasthenia (see Avena).

Verbena works to calm anxiety and anger. It is especially indicated for women (and men) who hold their anger in their pelvis leading to hormonal imbalances and pelvic congestion. Verbena will promote the parasympathetic aspect of central nervous system functioning while exerting mild choleretic and cholagogue effects.

- Pulmonary Conditions: Verbena is also used as an expectorant in chronic bronchitis and asthma Verbena reduces mucous production in these conditions.

Pharmacy: In regard to tonic herbs, the digestive capacity is the main determinant of dosage. If the stomach and digestive function is deficient, then tonics may be given with or after meals. In severe cases, they may need to be taken with liquid meals. Dosage should be small and frequent. Long-term therapy is the norm. Similar application is used for a trophorestorative effect. [2227]

Verbena is often added to formulas and tends to potentize and widen the range of formulations. In biphasic formulas, Verbena can be used in both phases.

Infusion: 1 tsp. (approx. 1.5 g) / cup water; sig 1 cup QD to TID (fresh 3x dried)
Decoction of radix: 1 Tbl./ cup water; sig 1 cup QD to TID
1:5 tincture 25% EtOH; sig 1-5 ml TID; weekly max. = 100 ml
1:1 fluid extract 25% EtOH; sig 1-3 ml TID

Drug Interactions: No information is currently available from the selected resources.

Contraindications: Tonic herbs in general are to be used with caution in severe debility, particularly when associated with immune or digestive collapse; renal or hepatic failure; rampant cancer or strong chemotherapy treatments.[2228] Trophorestoratives are used with caution in extremely debilitated patients. Verbena is also contraindicated in the first and second trimesters of pregnancy due to its emmenagogue effect.

Toxicity: No information is currently available from the selected resources.

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[2223] Peking Medical College, *C.A.*, 1975, 82:149650.
[2224] Kolk, MA, *Endocrinology*, 1985, 116:1687.
[2225] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 155
[2226] Mills S, Bone K. Principles and Practice of Phytotherapy: Modern Herbal Medicine. Churchill Livingstone, 2000. p. 155
[2227] Mills and Bone p. 155
[2228] Mills and Bone p. 155

Viburnum opulus/ V. prunifolium — Caprifolicaceae

Common name: Crampbark, High Cranberry (V. opulus), Black haw (V. prunifolium) (Viburnum will refer to V. opulus in this monograph unless otherwise indicated)

Habitat: (V. prunifolium):[2229]

- Indigenous to the eastern and central U.S.

Botanical description: (V. prunifolium)[2230]

- Flower and Fruit: The flowers are white and richly blossomed with flat apical cymes. The central florets are campanulate and fertile; the lateral ones are much larger, rotate and infertile. The calyx margin is small and 5-tipped. The corolla of the fertile florets is campanulate and 5-petalled. There are 5 stamens, a semi-inferior ovary and 3 sessile stigmas. The fruit is shiny black, juicy berry. Fruit of V. opulus is red.
- Leaves, Stem, and Root: Deciduous tree 5 m tall. It has gray-brown bark and green, grooved branches. The leaves are opposite, petiolate, 3-5 lobed, roughly dentate, green on both surfaces and softly pubescent beneath.

Part Used: Dried bark cortex, particularly of the root for V. prunifolium

Constituents: bitter compound, viburnin (glycoside), Valerianic acid, coumarins (scopoletin, aesculetin), salicosides, resin and 3% tannin, oxalates

Pharmacology: The spasmolytic effect of Viburnum spp. may be due in part to the presence of the coumarin, scopoletin, which has uterine sedative effects probably mediated through blockage of ANS.[2231],[2232] Scopoletin and aesculetin in V. prunifolium have marked spasmolytic activity on guinea pig small intestine.[2233]

Medicinal Actions: Spasmolytic (d/t viburnin) restores sympathetic and parasympathetic balance in voluntary and involuntary muscle spasms (Tilgner), sedative nervine(d/t Valerianic acid), astringent (d/t tannins), anti-asthmatic, tonic, diuretic, alterative, hypotensive, carminative, antiinflammatory

Traditional Medicinal Uses:

According to King's:[2234]

V. opulus:

V. opulus resembles V. prunifolium closely in its effects and may be used in the conditions named for which Black Haw is useful. Specific indications include cramps; uterine pain, with spasmodic action; pain in thighs and back; bearing down, expulsive pains; neuralgic or spasmodic dysmenorrhea. As an antiabortive.

- **Gynecologic Conditions**: V. opulus is a powerful antispasmodic being very effective in relaxing cramps and spasms of all kinds such as hysteria, cramps of the limbs or other parts in females, especially during pregnancy, and it is said to be highly beneficial to those who are subject to convulsions during pregnancy, or at the time of parturition, preventing the attacks entirely , if used daily for the last 2 months of gestation. Like V. prunifolium, it is a remedy for the prevention of abortion and to prepare the way for the process of parturition. It allays uterine irritation with a tendency to terminate in hysteria, while in the neuralgic and spasmodic forms of dysmenorrhea, it is a favorite remedy with many physicians. Cramps of limbs attending pregnancy yield to both V. prunifolium and V. opulus.
- **Genitourinary Conditions:** It has been used in spasmodic contraction of the bladder and in spasmodic stricture.
- **PulmonaryConditions:** V. opulus is useful to ally the spasm associated with asthma.
- **Topical Applications:** Dr. King has found a poultice to be very efficient in indolent and malignant ulcers; and, applied around the throat in the inflammation and swelling attending scarlatina maligna, and other diseases, it gives prompt and marked relief.

V. prunifolium:

Specific indications include uterine irritability, and hyperaesthesia; threatened abortion; uterine colic; dysmenorrhea with deficient menses; severe lumbar and bearing-down pains; cramp-like, expulsive menstrual pain; intermittent, painful contractions of the pelvic tissues; after-pains and false pains of pregnancy; obstinate hiccough.

- **Topical Applications**: Decoctions have been used as a gargle for apthae, as a wash for indolent ulcers, and in various ophthalmic disorders.
- **Gastrointestinal Conditions**: The astringent property lends its use for diarrhea and dysentery. Specific Haw, in drop doses, is a valuable drug in obstinate singultus (hiccough).
- **Cardiovascular Conditions:** Heart palpitations have been reported to be relieved by it. Such cases are sympathetic disturbances, generally near the menstrual period.

- **Gynecologic Conditions**: As a uterine tonic, it is unquestionably of great utility. It restores normal innervation, improves the circulation and corrects impaired nutrition of these organs. It is called for in weakened conditions of the body, with feeble performance of the uterine functions. In amenorrhea in pale, bloodless subjects, the menses are restored by it. In the hyperaesthetic or irritable condition of the uterus incident to highly nervous women, or as the result of overwork, it will be found and admirable agent. In dysmenorrhea, with deficient menses, uterine colic, and in those cases where there are severe lumbar and bearing-down pains, it will prove and efficient drug. Helonias is also an excellent agent in the latter condition. It is specifically indicated in cramp-like menstrual pains- pains decidedly expulsive and intermittent in character- and in the various painful contractions of the pelvic muscles, so common to disorders of women. V. prunifolium is of some value in nervous disorders and has been advised in chorea, hysteria, hystero-epilepsy, petit mal, and paralysis agitans. It is of service only when these troubles are associated with menstrual wrongs. Black Haw promptly allays ovarian irritation. It has been combined with Wild Cherry and aromatic herbs into a cordial to allay the pangs of dysmenorrhea; to arrest leukorrhea and of the second climacteric.

  Uterine congestion and chronic uterine inflammation are often greatly relieved by specific V. prunifolium. It acts promptly in spasmodic dysmenorrhea, especially with excessive flow. Menorrhagia due to malaria is promptly met. It is a good remedy for uterine hemorrhage, attending the menopause.

  The condition for which it is most valued is threatened abortion. It is the most prompt drug in the materia medica to check abortion, provided the membranes have not ruptured. In all cases of habitual abortion it should be given in small doses for a considerable length of time. By its quieting effects upon the irritable womb, women who have previously been unable to go to full term have been aided by this drug to pas through the pregnancy without mishaps which would otherwise have proven disastrous to both child and mother. Small doses of the specific Black Haw would be administered throughout the dangerous period, and may be continued with good results until parturition. It has been used to quell postpartum hemorrhage, but is less effective than ergot and Cinnamon. It assists in reducing the size of the womb in subinvolution of that organ. Cramps of limbs attending pregnancy yield to both V. prunifolium and V. opulus. False pains of pregnancy are readily controlled and for after-pains it is nearly as valuable as Macrotys or Actaea.
- **Male Conditions**: Black Haw is said to be of value in sterility. Some cases of spermatorrhea are benefited by it.
- **Musculoskeletal Conditions:** It is considered almost specific for cramp in the legs, not dependent on pregnancy, especially when occurring at night.

According to Cook:
V. opulus:

The bark is a slowly-acting relaxant with gentle tonic properties, mild and chiefly influencing the nervous system. The character of its action is that of the antispasmodic class.

- **Gynecologic Conditions**: It is chiefly employed in hysteria, painful menstruation, neuralgia and rheumatism of the womb and the uterine cramping incident to pregnancy. For these purposes it is usually employed in combination, especially in the Compound Syrup of Mitchella.
- **Gastrointestinal Conditions:** It is sometimes used in colic and cramping of the bowels, where it may be associated with Dioscorea.
- **PulmonaryConditions:** It is used in asthma and nervous restlessness with Caulophyllum.

V. prunifolium:
It is a good tonic of the mildly astringent class, acting slowly and rather soothingly and influencing the kidneys to a limited extent.

- **Gynecologic Conditions:** The best use to be made of it is as a tonic for uterine weaknesses, as prolapsus with flaccidness of the structures, chronic leukorrhea and passive menorrhagia.

Current Medicinal Uses:

Viburnum has a tonifying effect on the pelvic and digestive organs. Viburnum relaxes smooth muscle including uterus, bronchi and blood vessels. Viburnum exerts a relaxing effect on skeletal muscle as well and is helpful in relieving muscle cramps and spasms. Viburnum can be applied externally and massaged into tense muscles. It also helps to restore the coordination of the parasympathetic/sympathetic nervous system.

- **Gynecologic Conditions:** The astringent action of Viburnum combined with its tonifying effect and anti-spasmodic effect, make it useful in treating dysmenorrhea with excessive blood loss, or middleschmerz with ovulatory pain. In treating dysmenorrhea, Viburnum is a good herb to use in an acute formula to be taken beginning a few days before menses and then all the way through menses and for a few days afterwards. For menstrual cramps, use as much as possible throughout the day. Also, think about prescribing a long-term separate formula to nourish, tonify and increase circulation to the pelvic area. Viburnum restores normal ovarian function, and is useful in treating irregular menses and infertility. It is specific for cases of scanty menstrual flow or profuse menstrual flow with crampy pains with associated cardiac abnormalities, i.e. palpitations. Viburnum is good for congested tissues with associated debility and/or spasm. V. prunifolium is more specific to the relaxing the uterus. Viburnum opulus, while effective for uterine spasm, has a more diffusive anti-spasmodic action. This may be more indicated in a woman with pelvic cramping who has systemic tension. Viburnum is good for threatened miscarriage due to

increased muscle contractility/spastic uterus. (Traditionally, V. prunifolium is held in high regard for treating threatened miscarriage. A good way to remember this is "P for pregnancy").Viburnum is also good to decrease the post-partum pains of uterine contraction. It can be taken with the first 24 hours without danger of passing into the breast milk.

According to Mills and Bone:[2235]

- **Cardiovascular Conditions**: Viburnum can be utilized in Angina for its vasodilating and relaxing effect and can be combined with Tillia. Similarly, as a supportive herb, it can also be utilized in the treatment of hypertension.
- **Gynecologic Conditions**: Viburnum will relieve oviductal spasm making it useful for some conditions of conception difficulty. In regard to dysmenorrhea, Viburnum is indicated in short-term treatment to reduce uterine spasm. It is also utilized as a long term treatment to relieve chronic pelvic pain as seen in endometriosis. For threatened miscarriage, V. prunifolium or V. opulus is indicated for cramping or bearing down sensations. In preparation for childbirth, Viburnum can be utilized if there is a problem with dilation of the cervix.
- **Gastrointestinal Conditions**: For spasmodic constipation, Viburnum will improve motor function and reduce spasm, which can be enhanced in combination with Matricaria or Dioscorea. In addition, the reduction of gastrointestinal spasm will reduce intracolonic pressure, which can be of benefit in diverticular disease. This effect can be carried over for the treatment of Irritable Bowel Syndrome, in conjunction with Mentha as well as the other herbs listed above. In regard to peptic ulcer disease, Viburnum can be utilized to improve gastrointestinal motility. In turn, it can also quell gastrointestinal spasm as in vomiting, particularly when it is secondary to a respiratory condition that is causing severe coughing such as whooping cough.
- **Hepatobiliary Conditions**: Given its spasmolytic effect on smooth musculature, Viburnum can be used to relieve biliary spasm and pain in gall bladder conditions.

According to Weiss:[2236]

- **Gynecologic Conditions:** V. prunifolium has been considered almost a specific for dysmenorrhea. Although medicinal properties are contained in this herb, they have been greatly overrated. There has been no evidence so far that there is a particular action on the genital sphere and the effect is probably sedative and moderately antispasmodic. It would be an interesting trial to compare V. prunifolium with Achillea.

According to Scudder:[2237]

V. opulus: The Viburnum has been employed as an antispasmodic with reported success, hence it's name, cramp bark. If we are to be guided by the descriptions of our earlier practitioners, we would conclude that it exerted a direct influence in controlling spinal irritation, and spasmodic action arising from this.

Viburnum Prunifolium. (Black Haw.) It is claimed that Viburnum is a specific against abortion.

Current Research Review:

- Search of Medline revealed no human studies as of October 2002.

Pharmacy:

- Powder: 2-4 gm TID[2238]
- Decoction: 1-3 tsp. per cup water; sig 1-2 cups TID [1 tsp. = 1.2 g][2239]
- Tincture: 1:5, 45% alcohol; sig 5-10 ml TID, for acute- up to 5 ml q 1/2 hour, up to 30 ml total in 24 hours[2240]
  V. prunifolium extracted at 30% alcohol was five times more spasmolytic than a 60% extract.[2241]
- Externally as a rub or ointment (Equal parts with Lobelia[2242])
- Post-partum uterine contraction pain: Viburnum(3):Lobelia(1); 30-60 drops every 1.5 hr. up to 4-5 times[2243]

Contraindications/Toxicity: V. prunifolium contains oxalates that may be taken into consideration in cases of the propensity for oxalate stone formation.[2244] Cramp bark should not be taken during pregnancy unless under the guidance of a knowledgeable herbal practitioner. The berries have been known to cause death.[2245] Large doses sometimes produce nausea and vomiting.[2246]

[2229] *PDR for Herbal Medicines,* Medical Economics Company, Montvale, NJ, 1998, p. 1214.

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[2236] Weiss RF. *Herbal Medicine,* 6th ed. Hippokrates Verlag GmbH 1996. p. 307

[2237] Scudder J. *Specific Medications and Specific Medicines.*

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[2239] DiPasquale R, ND, Alschuler L, ND

[2240] Dipasquale R, ND

[2241] Balansard G, et al. Selection criteria for a Viburnum Extract, Viburnum Prunifolium L., as a Function of Its Venotonic and Spasmolytic Action. *Plante Medicinales et Phytotherapie* 1983; 17(3): 123-132

[2242] Alschuler L, ND

[2243] Alschuler L, ND

[2244] Brinker, F. *Herb Contraindications and Drug Interactions*. Eclectic Medical Publications, Sandy, OR 1998. p. 150

[2245] Tilgner

[2246] Felter HW, Lloyd JU. *King's American Dispensatory,* 18th ed. Eclectic Medical Pulbications, Sandy, OR 1983, p. 2060

Viscum album

Loranthaceae

Common name: Mistletoe

Habitat:

Botanical description:

Part used: Leaves

Historical use:

Energetics:

Constituents: Constituent composition depends on the host plant.

- lectins (also called viscotoxins)
- choline derivatives
- alkaloids
- polypeptides
- polysaccharides
- phenolic compounds: flavonoids, caffeic acid, syringin, eleutherosides
- sterols: triterpenes
- amines: AA, histamine, tyramine

Pharmacology:

Several groups of compounds have been shown to contribute to the medicinal action of mistletoe. Most notable are mistletoe lectins (also called viscotoxins; particularly lectin 1), choline derivatives, alkaloids, polypeptides, and polysaccharides. The lectins, peptides, and polysaccharides have shown immune-stimulating activity in human studies when mistletoe extracts are given by injection [2247]. In regard to immune function, Viscum has a variety of effects:

-↑macrophage phagocytic and cytotoxic function
-↑neutrophil production
-↑thymic weight
- ↑cortical thymocyte activity/proliferation
-↑NK cell activity
-↑Ig dependent CMI
-IL1, IL6, TNF induction

Some studies suggest these compounds, as well as mistletoe alkaloids, can also kill cancer cells in animals or *in vitro*[2248] . The German government's Commission E has stated that mistletoe injections around joints can help alleviate problems due to rheumatoid or other inflammatory forms of arthritis[2249].

Mistletoe extracts can stimulate insulin secretion from pancreas cells.[15] Mistletoe has also been shown to help reduce symptoms in diabetic mice[2250].

Medical actions: immunostimulant, antineoplastic, antihypertensive

Medical uses:

- **Cardiovascular Conditions:** Open studies carried out using oral mistletoe have found it can reduce the symptoms of high blood pressure, particularly headaches and dizziness. German doctors generally agree with these findings; however, mistletoe has a small (if any) effect on actually lowering blood pressure [2251, 2252]. However, Dr. Murray has described Viscum as being cholinomimetic resulting in inhibition of the medullary vasomotor center
- **Neoplastic Conditions:** Numerous clinical trials have found that subcutaneous injections of mistletoe extracts can help people with cancer of various organs, though some have also failed to show any benefit. There is no evidence that giving mistletoe orally would benefit people with cancer [2253].

Current Research Review:

- **Oncology:**
  - **Carcinoma:**[2254]

- Design: Prospective non-randomized and randomized matched-pair studies nested within a cohort study.
- Patients: 10,226 patients with carcinoma of the colon, rectum, or stomach, breast carcinoma with or without axiillary or remote metastases, or small cell or non-small-cell bronchogenic carcinoma. 1668 patients – experiment group.
- Therapy: Iscador – total extract of Viscum album
- Results: Iscador treatment can achieve a clinically relevant prolongation of survival time of cancer patients and appears to stimulate self-regulation.

○ **Cancer:**[2255]
- Design: Controlled clinical trial
- Patients: Patients with cancer
- Therapy: Viscum album extract
- Results: Treatment with V. album extract leads to an increase in Th1 cytokine levels, IFN-gamma, and IL-2, suggesting positive effect on cell-mediated immunity.

○ **Breast cancer:**[2256]
- Design: Clinical trial
- Patients: 14 patients with advanced breast cancer
- Therapy: Iscador, an extract of Viscum album, parenterally.
- Results: Increase of DNA repair was observed in 12 patients, which could be due to a stimulation of repair enzymes by lymphokines or cytokines secreted by activated leukocytes or an alteration in the susceptibility to exogenic agents resulting in less damage.

- **ENT:**
  - **Recurrent respiratory infections:**[2257]
    - Design: Randomized controlled clinical trial
    - Patients: Ninety-two children, 5-14 yo, living in areas exposed to radioactive fallout from Chernobyl with recurrent respiratory infections (RRI)
    - Therapy: Viscum album praeparatum mali or pini (Iscador M or P); 2 subQ injections a week x 5 weeks with doses of 0.01-1.0 mg.
    - Results: Both Viscum preparations were effective in reducing clinical symptoms. After a year of a single treatment course, the frequency of RRI relapses decreased by 78% and 73%, respectively. Viscum album resulted in normalization of initial immune indices either below or above the normal ranges. High levels of antiviral activity before treatment were significantly decreased by Viscum album mali
- **Immunology:**
  - **Effect on lymphocytes:**[2258]
    - Design: Clinical trial
    - Patients: Healthy volunteers
    - Therapy: Aqueous extract of Viscum album L. of the oak tree (VaQuFrF) 1 mg subQ injections.
    - Results: There was a fall in the absolute numbers and percentage of CD3/ 25- and CD8/38-positive lymphocytes 24 hours post injection. Monocytes in percent and absolute numbers showed a transient fall 6-9 hours, lymphocytes only in absolute and CD-4 positive lymphocytes only in percentage 2 hours after injection. There is increased extravasation of (activated) lymphocytes and monocytes after subcutaneous injection of VaQuFrF.

Pharmacy:
Dried herb: 2-6 g tid
tincture (1:5) 45% 1-3 ml tid
fluid extract (1:1) 25% .5 ml tid
Preparations:
Iscador: fermented juice, ↓ toxicity
Eurixor: standardized to lectin I
Lektinol

Contraindications: Brinker speculates that Viscum be avoided during pregnancy due to uterine stimulant action of tyramine.[2259]

Toxicity: The berries are considered much more toxic than the leaves or stems.

[2247] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001
[2248] Lininger et al: *Healthnotes*: *Clinical Essentials*, Herb Monographs. Prima Publishing, Rocklin, CA. 2001

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[2259] Brinker, F. Herb Contraindications and Drug Interactions, 3rd ed. Eclectic Medical Publications, Sandy, OR 2001. p. 150

Vitex agnus-castus

Verbenaceae

Common name: Chaste berry, monk's pepper, Vitex

Habitat: Vitex is native to the Mediterranean and Central Asia. It prefers creek beds and river banks.

Botanical description: Vitex is a deciduous perennial shrub that grows to heights between 6 and 25 feet. The leaves are divided into 5-7 narrow, 2-6 inch long leaflets that are dark green above and gray underneath. Slender spikes of lavender blue flowers bloom in summer and early fall. The fruit then appear. The fruit appear as tiny black peppercorns with a pepper-like aroma and flavor.

Parts used: Fruit; occasionally leaves, flowering tops

Historical Use: Vitex is a plant of medicinal antiquity being mention in the works of Hippocrates, Dioscorides and Theophrast. In the Middle Ages, the berries were a symbol of chastity and were used to suppress sexual excitability as monks would use them to replace pepper and suppress their libido. *Vitex agnus- castus* and other *Vitex* species have been used traditionally by many cultures in Africa, India, and Southeast Asia for birth control purposes (at high dosage levels).

Energetics: Aside from these physiological indications, *Vitex agnus-castus* may be prescribed based on its subtle qualities. Vitex has sweet and cool qualities. Dr. Alschuler describes it as exerting a centering influence. A person with the following characteristics will benefit from Vitex: nervous energy, excess sympathetic states that are manifested by "excessive" sexual drive, nervousness, palpitations, or menstrual irregularities. Vitex exerts a calming and strengthening effect.

Constituents: No single constituent has been identified as being the active one, in fact, with the exception of agnoside, all constituents are found in other plants. The total sum of constituents appear to generate a synergistic effect.

- *Flavonoids*: castican, orientin, isovitexin
- *Iridoid glycosides*: agnuside (the reference constituent for standardization), aucubin
- *volatile oil* (0.8-1.6%): terpenoids *(*cineole, sabinene, limonene, camphene), α- and β-pinene
- *3-ketostaroids: Vitex* has been found to contain 3-ketosteroids (probably progesterone and 17 -a-hydroxyprogesterone) by thin-layer chromatography.[2260]

The flowers and leaves may also possibly contain progesterone, 17-hydroxyprogesterone, testosterone, and epitestosterone although further research is needed. Other constituents in the flowering tops include flavonoids (particularly C-glycosides), and iridoids (aucubin, agnuside, eurostoside), 3-ketosteroids, essential oils(O.8-1.6%): O-cymol, f)-famescene, *a*- and f)-pinene, cineol, sabinene, limonene.

Pharmacology: Vitex affects the pituitary gland in two primary ways. First, *Vitex* has been shown to inhibit prolactin with both *in vitro* (pituitary cell cultures) and *in vivo* studies by binding to dopamine receptors on the pituitary gland.[2261, 2262] Thus, the binding of Vitex causes a suppression of prolactin synthesis and release by binding to the D2 receptor. The decreased prolactin results in increased corpus luteum growth and increased progesterone.[2263]

The second effect that Vitex has on the pituitary gland is by increasing the anterior pituitary's production of luteinizing hormone (LH) and inhibiting the production of follicle stimulating hormone (FSH).[2264] This results in a relative increase in progesterone and a decrease in estrogen, and in men a decrease in testosterone. Vitex does not appear to affect GnRH.[2265]

The flavonoid fraction of some *Vitex* spp. has been found to have anti- androgen effects.[2266]

The constituent volatile oils have demonstrated antibiotic effects. Aucubin has demonstrated hepatoprotective activity against experimental hepatotoxicity induced by carbon tetrachloride and α- amanitin.

Medicinal actions: Pituitary adjuvant, dopamine agonist, galactagogue, emmenagogue, FSH antagonist, LH agonist, prolactin antagonist, hepatoprotective, antiseptic, and anaphrodisiac

Medicinal use:

- Gynecologic Conditions: Vitex has found a special application in Naturopathic Medicine for the treatment of endocrine disorders involving corpus luteal insufficiency as evidenced by the absence of a midcycle thermal shift or a shortened luteal phase with basal body testing, progesterone deficiency, and an abnormally low progesterone/estrogen ratio. Vitex has been found to normalize abnormally shortened luteal phases. It has been used to treat hormone imbalance due to ovarian suppression after discontinuing oral contraceptives.

All of the following conditions are manifestations of this relative progesterone deficiency and/or excess prolactin:

acne	dysmenorrhea	endometrial hyperplasia
endometriosis	infertility	insufficient lactation
menopausal syndrome	menorrhagia	metrorrhagia
oligomenorrhea	perimenopausal depression	polycystic ovary syndrome (PCOS)

polymenorrhea premenstrual syndrome secondary amenorrhea
threatened miscarriage uterine myomas

Along with relative progesterone deficiency, prolactinemia is an indication for Vitex.Although *Vitex* has shown prolactin inhibiting effects, it has been found to be an effective galactogogue. Studies have demonstrated that *Vitex* in breast feeding mothers is effective for maintaining adequate breast milk production.[2267]

Vitex has traditionally been used to decrease libido and can be used in androgen excess disorders. It is has been used to treat virilization, and excessive sexual drive.

Menstrual disorders: Menstrual disorders, particularly secondary amenorrhea, ovarian cysts, cystic hyperplasia of the endometrium (often a premenopausal disorder that causes excessive uterine bleeding) respond favorably to Vitex.[2268,2269,2270] In both of these cases, there is often corpus luteum deficiency resulting in abnormal or absent follicle development and lack of ovulation. There have been several clinical trials done that demonstrate the efficacy of Vitex in restoring the luteal phase of the menstrual cycle. (Note: these trials are open, uncontrolled studies.) Thus, the menstrual cycle approximates a more optimal length, menstrual bleeding is reduced if excessive and cystic tissue resolves. For menstrual function to stabilize, many months of Vitex administration are required.

Infertility: Vitex administration may restore fertility in women if they have anovulatory cycles as a consequence of shortened luteal phase and decreased progesterone.[2271,2272] There are potentially many confounding variables, not to mention the placebo effects. Nonetheless, the restoration of fertility is a common usage of Vitex and seems to prove its reputation in current clinical practice.

Premenstrual syndrome: Some cases of PMS may be helped with Vitex. The etiology of PMS in unclear, but at least in some women, it appears to be the result of decreased progesterone to estrogen ratio. Interestingly, in these cases, progesterone administration is not always successful. Vitex may be a more subtle and effective way to treat this type of PMS. A controlled trial done in England found Vitex to be of benefit for all types of PMS except those women with a definitive picture of PMS-C (headache, craving for sweets, palpitations, dizziness).[2273] Vitex also has been noted in several studies to reduce atypical manifestations of PMS such as post-traumatic epilepsy[2274], mouth ulcers[2275], and orofacial herpes simplex[2276]. In an unpublished study comparing the efficacy of Vitex with placebo, women suffering from PMS symptoms such as breast tenderness, abdominal bloating, migraine, and acne experienced a 40% reduction of symptoms compared to a 10% reduction of symptoms in the women on placebo. Interestingly, the emotional symptoms of PMS were reduced by 70% in the Vitex group, but the placebo group also experienced a 60% reduction of emotional symptoms![2277]

Acne: Vitex increases LH and lowers FSH, one consequence of which is lowered testosterone levels. This may explain the benefit of Vitex in improving acne. In one placebo controlled trial of males and females, after 3 months of treatment with Vitex, both males and females experienced a 70% improvement in their acne.[2278] This was significantly better than the placebo. Keep in mind that if Vitex is given to someone who does not have a relative progesterone deficiency, his or her acne will worsen, and in fact may be initiated by the prescription of Vitex.

Male Conditions: It may be useful in the treatment of benign prostate hypertrophy in conjunction with *Seronoa, Urtica,* and *Pygeum.*

According to Mills and Bone:[2279]

- Gynecologic Conditions: A common cause of cyclical disorders involves hyperprolactinemia. The latent condition is generally present throughout the cycle. At the end of the luteal phase the inhibitory effect of progesterone is removed. As a result, high quantities of prolactin are released at night as a response to stress. (note: A relative insufficiency of the corpus luteum can also lead to a relative hyperprolactinemia). Efficacy appears to be about 70%.

  Breast Conditions: Because of it ovarian regulating function Vitex is a primary herb in the treatment of breast cysts and fibroadenoma. Vitex will also promote milk production in the lactating mother.[2280,2281]

  PMS: Vitex has been shown to be beneficial for PMS-A, PMS-D and PMS-H, particularly with the symptoms of breast tenderness and fluid retention. PMS associated with hyperprolactinemia may be a more specific indication for Vitex.[2282]

  Menstrual Disorders: Vitex is indicated for menorrhagia and secondary amenorrhea. (Note: Although these conditions appear to be the opposite ends of the spectrum for menstrual bleeding, the fact that Vitex can be used to treat both indicates its vast normalization ability in normalization of menstrual function).

  Women with cystic hyperplasia of the endometrium respond well to Vitex as this condition is due to a relative progesterone deficiency. In particular, women with corpus luteum deficiency are assisted by Vitex.

  Infertility: Vitex may be indicated for difficult in conception. After using Vitex women tended toward a longer luteal and an increase in LHRH suggesting enhanced corpus luteum function.[8,9]

  Uterine Fibroids: Vitex is a primary component to treatment of uterine fibroids and may be given at high doses for severe cases.

  Endometriosis: Vitex is likely the most important herb for the treatment of endometriosis and usually is used in higher doses.

  Postnatal depression: see formula below.

- Dermatological Conditions: Vitex has been used to treat acne in both men and women.[2283]

According to the Textbook of Natural Medicine:[2284]

- Gynecologic Conditions: The TNM mentions use for the above conditions including corpus luteum insufficiency, PMS, abnormal menstrual cycles and hyperprolactinemia.

According to Weiss:[2285]

- Gynecologic Conditions: The primary indication for Vitex is menstrual disorders due to corpus luteum insufficiency: hyper or polymenorrhea and premenstrual syndrome base on hyperfolliculinism. Other premenstrual complaints may respond to Vitex such as acne and oral herpes as well as premenstrual knee joint effusions and water retention.

  Vitex may be used as a galactagogue although some time is necessary for the effect to occur. At the same time, it can be give for weeks to months to maintain a good level of milk production without side effects.

According to King's:[2286]

This agent is a reported galactagogue and emmenagogue and is said to repress the sexual passions for which purpose the ancient Athenian women employed it. It has been suggested in small doses in *impotence and sexual melancholia*. It is probably a remedy for s*exual irritability* with nervousness or melancholia or mild dementia.

Pharmacy:

Vitex is not a fast-acting botanical requiring 1-2 menstrual cycles for effect to occur. Treatment for more difficult conditions such as anovulatory cycles and infertility may take many months before demonstrating benefit. For secondary amenorrhea of greater than 2 years duration, administration should be for at least 1.5 years.[2287]

It is best to dose Vitex first thing every morning in accordance with the diurnal rhythm of the pituitary gland. It may be prescribed during the luteal phase of the menstrual cycle (day 15-28) or throughout the cycle. Vitex is slow acting and its efficacy should be assessed only after 3 months of treatment, with the full therapeutic effect typically manifesting after 6 months. It should be discontinued if the length of the menstrual cycle is excessively changed.

Infusion: steep 1/2 to one teaspoon (5-10 g)of the berries or seeds in 8 oz. of hot water for 15 minutes: 8 ounces of the infusion, 3 times/day, or once during the morning.

1:5 tincture: 3 to 10 ml per day in am

1:2 fluid extract: 1 to 4 ml per day

NMIMH lists 20 ml per week as maximum dose (but this seems low from my perspective) (Dipasquale drop doses for energetic effect

Standardized extract (Agnolyt, Vitalex (German)): 40 drops or 1 capsule every morning (9 g of fruit per 100 ml extract)

Postnatal Depression[2288]: Panax ginseng (10 ml), Hypericum perforatum (25 ml), Glycyrrhiza glabra (15 ml),Withania somnifera (30 ml), Verbena officinalis (20 ml) (all 1:2 except Glycyrrhiza which is 1:1)

Contraindications: Vitex can aggravate spasmodic dysmenorrhea due to enhanced secretion of progesterone. Yet, spasmodic dysmenorrhea that is present with congestive PMS will respond to Vitex.

Caution is advised in pregnancy due to its emmenagogue effect (empirical) though it has been used to help prevent miscarriage in the first trimester when due to progesterone insufficiency (empirical).[2289] A report that Vitex may be inappropriate with in-vitro fertilization treatment as a promoter of normal ovarian function is likely premature.[2290] Vitex is potentially inappropriate to administer in conjunction with progesterone drugs, OCPs or HRT.[2291]

Toxicity: In high doses (20 times therapeutic), Vitex inhibits all aspects of anterior pituitary function resulting in decreased pituitary, adrenal and uterine function in guinea pigs.[2292] Rare occurrences of formication, abnormal menstrual cycle changes, itching, urticaria, gastrointestinal and lower abdominal complaints and short term headaches have been reported in large scale trials.

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Withania somnifera — Solanaceae (Nightshade Family)

Updated Fall 2002

This monograph is adapted from: Bone K, "Withania somnifera", *Clinical Applications of Ayurvedic & Chinese Herbs*, (Queensl&, Australia: Phytotherapy Press), 1996:137-41.

Common name: Ashwaganda (Sanskrit), Winter Cherry, Indian ginseng.

Habitat: The drier parts of subtropical India & Middle Eastern countries. Cultivated in many parts of the world.

Botanical description: Erect shrub up to 3.5 feet in height. Simple leaves up to 10 cm long. Inconspicuous pale green flowers in cymes. The fruit is a berry, which is orangish-red when mature.

Parts used: Root.

Energetics: Ashwaganda has the smell of a horse, as it gives the vitality & sexual energy of a horse. Bitter, Sweet Astringent. Heating. (-)Vata & Kapha. (+) Pitta & Ama when in excess. Affinity for muscle, fat, bone, marrow, nerves; and the reproductive, respiratory & nervous systems.[2293]

Constituents:[2294]

- Steroidal compounds including lactones (withaferin A, withanolides) & acylsteryl glucosides.
    - Saponins with an additional acyl group: sitoindoside VII, VIII.
    - Withanolides with glucose at carbon 27: sitoindoside IX, X.
- tropane alkaloids (tropine, pseudotropine, isopelietierine, anaferine).
- Iron.

Pharmacology:

Withanolides are believed to account for the multiple medicinal applications of Ashwagandha. Withanolides are steroidal & bear a resemblance, both in their action & appearance, to the active constituents of Asian ginseng *(Panax ginseng)* known as ginsenosides.[2295] Sitoindosides protect against stress-induced stomach ulcers, have anti-depressant action, and help to improve learning & memory in rodents.[2296] Steroidal saponins in the root have been shown to stimulate the immune system, reduce inflammation, improve memory, & prevent the development of cancer. In general, steroidal saponins have antibacterial, anti-tumor, anti-hepatotoxic & antiinflammatory activities.[2297]

High doses of tropane alkaloids have demonstrated prolonged hypotensive, bradycardic, respiratory stimulant & cerebral depressant effects by binding to & stimulating GABA-A receptors, similar to Valerian & Hypericum.[2298] Systemically, tropane alkaloids are spasmolytic to smooth muscles, exerting an overall sedative action.[2299]

Withania is adaptogenic & tonic. The whole root of *W. somnifera* fed to rats caused weight gain & increase in the weight of their offspring when compared to controls.[2300] The whole root has been found to increase white blood cell counts, specifically, neutrophil counts.[2301] A pharmacological comparison of Withania & *Panax ginseng* demonstrated that Withania has similar potency to Panax in terms of adaptogenic, tonic & anabolic effects.[2302]

Withania is more effective than standard anti-inflammatory drugs at decreasing alpha-2-macroglobulin (a liver-synthesized protein which increases dramatically during inflammation).[2303] Withania has been demonstrated to prevent bony degenerative changes which normally occur during inflammatory arthritis.[2304]

Withania has anti-tumor activity. When a whole plant extract of Withania was given orally to mice at 200 mg/kg, their mortality from urethane-induced lung cancers decreased significantly. Also, a decrease in body weight d/t tumor growth was countered. Finally, the incidence, number & size of tumors decreased.[2305] Intraperitoneal administration of Withania has been shown to reduce sarcoma in mice & appears to sensitize tumor cells to the effects of radiation.[2306] Currently, withaferin A, which is higher in the leaves, is used to treat cancer.

Medicinal actions: Hypotensive. Bradycardic. Spasmolytic. Anti-tumor. Immunomodulating. Anti-inflammatory. Adaptogenic. Rejuvenating Tonic. Aphrodisiac. Sedative Nervine. Astringent.

Current & Traditional Medicinal Use:

Ayurvedic medicine - as a rejuvenative, to induce dreamless sleep, & as a tonic for male reproduction. It increases kapha, ojas, & ama (in excess), as well as improve memory, strength, & sattva. Withania is indicated in the following conditions: general debility, sexual debility, nervous exhaustion, convalescence, problems of old age, emaciation of children, loss of memory, insomnia, paralysis, Multiple Sclerosis, weak eyes, rheumatism, skin affliction, cough, difficult breathing, anemia, fatigue, infertility, & glandular swelling.[2307]

General Western usage - W. somnifera is a tonic herb. It is best suited to individuals who are debilitated & who suffer from nervous exhaustion, emaciation & anemia. Withania is helpful in convalescence after acute illness or stress, impotence, chronic disease w/

inflammation & bony degeneration, & as a general tonic & adaptogen in persons w/ hypertension & high cholesterol or in persons w/ cancer & consequent weight loss. Withania acts as a sedative, helping to restore the health of the nervous system & person overall.

Current Research Review:

- **NIDDM and Hypercholesterolemia:** Powder W. somnifera root administered for 30 days was found to be a potential source of hypoglycemic, diuretic, and hypocholesterolemic agents. Six mild NIDDM subjects and six mild hypercholesterolemic subjects were treated without noted adverse effects. Significant increase in urine sodium, urine volume, significant decrease in serum cholesterol, triglycerides, LDL and VLDL cholesterol were observed. Decrease in blood glucose level was comparable to that of an oral hypoglycemic drug.[2308]
- **Osteoarthritis:** Herbomineral formulation containing roots of Withania somnifera, the stem of Boswellia serrata, rhizomes of Curcuma longa, and a zinc complex (Articulin-F) produced a significant drop in severy of pain and disability score in the patients with osteoarthritis. Forty-two patients were studied over a period of 8 months. The study was placebo controlled. Radiological assessment did not show any significant changes.[2309]
- **Anemia and Growth**: Withania in the dose of 2 g qd x 60 days was found to be a growth promoter with antianaemic activity in children. Fifty eight children 8-12 years old were involved in a double-blind placebo-controlled clinical trial. There was a significant increase in mean corpuscular hemoglobin and serum. Body weight, grip strength & serum iron also increased, although statistically insignificantly.[2310]
- **Ageing:** Withania in the dose of 3 g qd x 1 year was tested on the process of aging in 101 healthy male adults 50-59 years of age in placebo-controlled double-blind study. Significant improvements in Hgb, RBC values, hair melanin & seated stature were observed. Serum cholesterol decreased & nail calcium was preserved. ESR decreased significantly, and ~71% of those who received the herb reported improvement in sexual performance.[2311]
- **Training Aid**: Withania, 1 g qd x 29 days, administered to trainee mountaineers in an uncontrolled trial, improved sleep, responsiveness, alertness, & physical capabilities.[2312]

Pharmacy: 1-6 g/day of dried root.[2313] [2314]
1:2 tincture: 6-12 ml/day.[2315]

Drug Interactions: Withania may potentiate the effects of barbiturates.[2316]

Contraindications/Toxicity: Potential abortifacient effect; contraindicated during pregnancy.[2317]

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Zanthoxylum americanum

Rutaceae

Common name: Prickly ash

Habitat: The tree grows in fields and pastures in N. America.

Botanical description: A small tree with gray bark which is covered with small prickles. The leaves are pinnately compound in clusters axillary to the alternate branches. The leaflets are acute, downy when young and occur in 4-5 pairs with one odd one. The flowers are diocious, small, green-yellow with 4-5 petals. The fruit is thick with 1-2 seed pods containing a small black seed.

Parts used: Root bark and berries

Constituents: Alkaloids, benzophenantridine alkaloids, coumarins

Medicinal actions: Circulatory stimulant, diaphoretic, anti-rheumatic, carminative, sialogogue, local counter-irritant

Traditional Medicinal Use:

Specific Indications and Uses: hypersecretion from debility and relaxation of mucous tissues; atonicity of the nervous system (larger doses); in capillary engorgement in the exanthemata, sluggish circulation, tympanites in bowel complaints, intestinal and gastric torpor (with deficient secretion), dryness of the mucous membrane of mouth and fauces (with glazed, glossy surfaces), flatulent colic, Asiatic cholera, uterine cramps, and neuralgia. For the painful bowel disorders, the preparations of the berries are to be preferred.[2318]

Cook described Zanthoxylum as having a moderate quantity of relaxing and stimulating power, which acts promptly and diffusively; and leaves behind a warm impression. He considered it as much more pungent and heating than Zingiber, and much less so than Capsicum, being suited only to languid conditions.

King noted that Zanthoxylum acts upon the secretory tissues particularly when chewed, and the nervous and circulator systems, having both local and systemic action. The bark, when chewed, imparts an aromatic, sweetish taste, followed by bitterness and persistent acridity. He considered it best adapted to debilitated patients as well.

Cook also described the berries as quite fragrant, of qualities similar to the bark, but much more diffusive and transient in action and also stronger and more exciting than the bark, less relaxant, and more likely to irritate the stomach and leave the skin a little hot and dry. They are used for the same general purposes as the bark, but for proportionately "lower" conditions as a pungent and prompt stimulant to combine with relaxant alterants.

Prof. King cautioned that there is a material difference in their influence on the system between the tincture of the bark, or that of the berries. The properties of the bark, as given by him, are stimulant, tonic, alterative, and sialagogue; of the berries, stimulant, carminative, and antispasmodic, acting especially on mucous tissues.

(FYI: As an example of some of the contention between competing theories of medicine at the time, Cook stated "Dr. J. King tells of a patient having nearly lost his life, in cholera, by using a tincture of the bark instead of the berries, and connects with the bark an idea of unsafeness; but this is a nonsensical story, and is a childish tale to be told by a man directing the use of Aconite, Veratrum, prussic acid, and strychnine.")

- Cardiovascular Conditions: Cook observed an increase of cappilary and smaller arterial circulation. The skin, salivary glands, and lymphatic system were considered the focus of most of its influence followed by the serous and mucous tissues, and the kidneys.

A warm infusion was employed to favor full outward circulation, particularly of service in all cases of capillary stagnation with blunted sensibilities. Under its effect cardiac function was observed to increase with the pulse becoming slightly accelerated.

- Dermatologic Conditions: Owing to its action on blood stasis, overcoming capillary engorgement, it was found useful in determining the rash to the surface in the eruptive diseases, and is especially serviceable in cases of retrocession of the eruption.
- Gastrointestinal Conditions: Zanthoxylum was observed to increase the flow of saliva, and was considered an excellent therapy in dryness of the mouth and throat. For similar purpose it was used as an associate of Hydrastis and Capsicum as a gargle in scarlatina and diphtheria.

Some Physiomedicalists valued it for mild cases of paralysis of the tongue, and as a wash to the mouth and over the glottis in loss of voice.

King observed that In the stomach it creates a sense of warmth, the flow of both gastric and intestinal juices is augmented and there is increased biliary and pancreatic activity. In general, he utilized Zanthoxylum with lack of secretion in any part of the intestinal tract.

He also noted Zanthoxylum as an admirable gastro-intestinal tonic and used it in the treatment of *atonic dyspepsia* and *gastric catarrh*, many chronic affections of the mucous tissues with enfeeblement, relaxation, and hypersecretion.

However, In regard to constipation, Zanthoxylum was indicated when due to deficient intestinal secretion and when accompanied by a flatulent distension of the abdomen.

- Genitourinary Conditions: King notes that the kidneys become more active under the influence of Zanthoxylum and increased urinary product results.

- Gynecological Conditions: Zanthoxylum was used for obstructed menstruation from exposure secondary to capillary stagnation, functional dysmenorrhea and neuralgic dysmenorrhea with marked pain and hypersensitiveness.
- Inflammatory Conditions: In sub-acute and chronic rheumatism, it is an agent of the most excellent qualities; and may be used in warm infusion for acute cases, especially in company with Cimicifuga, particularly lumbago, torticollis, myalgia, and muscular rheumatism. As a cold preparations with such articles as Cimicifuga and the berries of Phytolacca for chronic cases; in chronic rheumatism, its value was considered to be due to its eliminative power.
- Neurological Conditions: Zanthoxylum was considered a valuable nerve stimulant, It is valuable in all cases of prostration, and has been recommended in "hemiplegia, locomotor ataxia, and all depressed conditions of the vital forces." It has been employed in neuralgia, and paralytic conditions of the vocal apparatus and organs of deglutition.
- Pain Conditions: Its use in odontalgia was confined to those cases where there is dull, grumbling pain due to peridental inflammation, the parts being dry and shining, and the buccal secretions scanty.
- Pulmonary Conditions: The Physiomedicalists utilized effect of stimulating outward circulation in cases of capillary stagnation including recent colds and as an associate to Asclepias in typhoid fever cases where the extremities are cold and the patient is listless.

The Eclectics considered it as a remedy of value in pharyngitis, especially the chronic variety, the mucous surfaces presenting a glazed, shining, dry condition, with thin, adherent scales of dried mucus. In both pharyngitis and post-nasal catarrh a decoction locally, and specific Zanthoxylum (bark) internally, was found to aid a cure in those cases having dryness of mucous membranes as a distinctive feature.

- Topical Applications: Externally, the powder is a valuable application for ulcerative conditions, indolent chancres and buboes, and similar low conditions; and the tincture is of use in mildly stimulating liniments.

Current Medicinal use:

- Cardiovascular Conditions: Zanthoxylum is used primarily as a circulatory stimulant. It is a strong peripheral vasodilator. It is well indicated in people with insufficient circulation through their extremities, i.e. Raynaud's phenomenon, thromboangiitis obliterans (Buerger's disease). In these conditions, combining Zanthoxylum with anti-spasmodics such as Viburnum opulus and Achillea millefolium will increase circulation to the extremities over a several month period of time. Zanthoxylum is also an excellent herb for elders who have deficient circulation and combines well with Ginkgo biloba and Rosmarinus officinalis for this indication. Prickly ash exerts its influence slowly and is best suited to chronic conditions.
- Gastrointestinal Conditions: Zanthoxylum exerts a counter-irritant effect internally on the gastrointestinal tract and is a sialogogue.
- Neurological Conditions: Zanthoxylum stimulates nerve activity. It is indicated when the nervous system lacks tone and metabolism is sluggish. It is also indicated when mucous membranes are not functioning properly.
- Topical Applications: Zanthoxylum is a local counter-irritant and analgesic. For this reason, it is applied externally over painful joints and arthritic joints to stimulate circulation through the area. Zanthoxylum can be applied over sore gums or gargled for painful inflammation of those tissues.

A good combination for an analgesic gargle is Capsicum: Hydrastis: Zanthoxylum.

Pharmacy: The dosing of Zanthoxylum changes its effects. In smaller doses, it addresses hypersecretion resulting from debility and relaxation of mucous membrane tissues. In larger doses, it addresses atonicity of the nervous system.

Decoction: 1-2 tsp./cup; sig 1 cup TID [1 tsp. = 1.5 g]
Tincture: 1:5 45% EtOH; sig 1-3 ml TID
Fluid extract: 1:1 45% EtOH; sig 0.5-2 ml TID

Drug Interactions: No information is currently available from the selected resources.

Contraindications: Cook stated that Zanthoxylum should not be employed when the stomach is irritable. Such observation is prudent since Zanthoxylum exerts a counter-irritant effect on the gastrointestinal tract. Its use should, therefore, be avoided in hypersecretory and/or ulcerated gastrointestinal tissues. Large doses give a feeling of nausea, and may cause an unpleasant burning in the stomach of a person at all sensitive

Because of its strong peripheral vasodilating effect Zanthoxylum is contraindicated in weak, fatigue hearts or in people with low vital force.

Zanthoxylum is contraindicated in pregnancy and nursing.

Toxicity: No information is currently available from the selected resources.

[2318] Felter, H. W., Lloyd, J.U. King's American Dispensatory, 18th ed.. Eclectic Medical Publications. Sandy, OR. 1898

Zea mays

Poaceae

Common name: Corn silk

Habitat:

Botanical Description:

Parts Used: Flower pistils

Energetics: [2319]

- Zea is mildly sweet and astringent, cool, drying and moistening, nourishing, restoring, stimulating, dissolving, and softening. It enters the Urinary Bladder, Kidney and Gall Bladder meridians.
- Clears heat, dries damp, reduces infection and inflammation, and stops discharge; promotes bile flow and reduces liver congestion: Indicated in damp heat in the Kidney, Urinary Bladder and Gall Bladder.
- Promotes urination, resolves toxicosis and drains fluid congestion; dissolves deposits and stones, and relieves irritation. Indicated in Kidney qi stagnation with toxin accumulation
- Compare with Jin qian cao (Lysimachia) and Guang dong jin gian cao (Desmodium)

Constituents: [2320]

- Saponins, allantoin, sterols, alkaloid, vit. C, vit. K, potassium, sugars including mucilage, cryptoxanthin, anthocyanins, plant acids, fixed oil (2%), essential oil (0.1%): carvacrol, terpenes, bitter compounds, polyphenols (12%), potassium salts

Pharmacology:

- Crude ethanolic extract of corn silk effectively inhibited tumor necrosis factor-alpha (TNF) and E.coli lipopolysaccharide (LPS) activity in human endothelial cells. TNF and LPS cause upregulation of several adhesion molecules and enhance leukocyte adhesion to human endothelial cells. By interfering with these processes, Zea mays is valuable for the treatment of bacterial sepsis and various inflammatory diseases.[2321]
- No other pharmacology could be found at this time.[2322]

Medicinal actions: Demulcent, Diuretic, Cholagogue

Traditional Medicinal uses:

- Genitourinary Condtions: Zea has been used in southern France for calculi, gravel and strangury (painful and interrupted urination in drops produced by spasmodic muscular contraction of the urethra and bladder). Zea is beneficial in acute and chronic inflammations of the bladder and edema (dropsy) secondary to renal or cardiac origin. Zea's diuretic action is largely due to its tonic effect on the heart and vasculature. It is particularly valuable in the treatment of pediatric bladder disorders, gonorrhea and conditions where the decomposition of the urine takes place within the bladder.[2323]

Current Medical Uses:

- Genitourinary Condtions: Zea is best used fresh (organic only!) because of the high sugar content, which gives this plant its diuretic effect. Zea mays contains mucilage and allantoin, which exert demulcent and vulnerary action. The longer the silk is dried, the less diuretic it is. These sugars are very soluble in water, as is the allantoin, therefore a cold infusion soaked overnight provides a mucilagenous, soothing, diuretic sweet drink. Corn silk is rich in potassium salts and therefore is considered to be a potassium-sparing diuretic. If added to a urinary formula, it should be a generous part, and it combines well with antiseptics. Zea mays also has mild choleretic activity. Zea mays is indicated in the treatment of urinary inflammation and irritation, cystitis, pyelitis, gonorrhea, increased phosphates and urates, and edema.
- Hepatobiliary Conditions: Zea is indicated in sub-acute gallstone attack manifesting as sharp right flank pain. In China, its cholagogue action is utilized in the treatment of simple jaundice. Zea is considered hepatobiliary sedative (see the comparative Chinese herbs above). [2324]

Current Research Review:

- **Urology:**
  - **Diuretic effects:** [2325]
    - Design: Placebo controlled double-blind crossover clinical trial
    - Patients: Not stated in the abstract
    - Therapy: Zea mays, Imperata cylindrica, Plantago major, and Orthosiphon stamineus

    - Results: No influence was recorded for the 12- and 24-h urine output or on the sodium excretion for any of the drugs
- **Dentistry:**
    - **Plaque and gingivitis:** [2326]
        - Design: Double-blind placebo-controlled clinical trial
        - Patients: Forty three subjects
        - Therapy: Mouthwash based on triclosan or mouthwash based on nonsaponifiable maize germ (Zea mays L).
        - Results: The mouthwash based on Zea mays L had no beneficial action on the Plaque Index, which increased slightly, but it led to an improvement in the Gingival Index.

Pharmacy:

- Acute: 2-4 g/day; 1-2 Qt/day or 1 cup every hour [1tsp. = 0.5g]
- 1:5 tincture: 3-18 ml /day

Contraindications:

- Zea has a hypoglycemic effect and may antagonize the effects of prothrombopenic anticoagulants such as dicoumarol and coumadin due to its vitamin K content.[2327]

Toxicity: none

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[2322] Personal comment: Steve Parcell, 2002

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Zingiber officinalis — Zingiberaceae (Ginger Family)

Updated Fall 2002

Common name: Ginger. Chinese: Gan jiang (dry), Shen jiang (fresh). Sanskrit: Sunthi or Nagara (dry); Ardraka (fresh). Japanese: Kankyo (dry); Shokyo (fresh). Zerzero (Italian). Ingefaer (German). Gingembre (French).

Habitat: Indiginous to SE Asia, Cultivated in US, India, China, West Indies, Mexico, Africa, Fiji, Australia & various tropical regions.

Botanical description: A creeping perennial on a thick tuberous rhizome, which spreads underground. In the first year, a green, erect, reed-like stem about 60 cm high grows from this rhizome. The plant has narrow, lanceolate to linear-lanceolate leaves 15-30 cm long, which die off each year. The flower grows directly from the rhizome & terminates in a long, curved spike w/ white or yellow flowers from each spike.

Part used: Rhizome.

Energetics:[2328] Pungent, Sweet. Hot, Bitter. (-)Vata & Kapha. (+) Pitta. Works on all tissues, esp. digestive & respiratory systems.

Constituents:

- Essential Oil (1-3%): Sesquiterpenes - Zingiberene, beta-Sesquiphellandrene & beta-Bisabolene.
- Pungent (Hot) Principles: Gingerols (1-2.5%) & Shogaols.[2329]
- Other: Starch, Proteins, Proteases, Vitamins, Resins. [2330]

Pharmacology:

The sesquiterpenes (gingerols) beta-sesquiphellandrene & related zingiberene are found in the highest concentration in fresh ginger. Gingerols decompose into shogaols upon drying & storage. This may be why fresh ginger is preferred in Traditional Chinese Medicine for the treating the common cold.[2331] Extracts of alcohol, hexane or acetone yields both oily & resinous materials called oleoresin.[2332]

The primary effects of ginger are:

- Antioxidant.
- Inhibition of prostaglandin (COX-2), leukotriene (5-LOX) & thromboxane synthesis. Ginger also inhibits IL-1 & TNF. Inhibition of thromboxane synthesis & lipid peroxide formation, causes a reduction in platelet aggregation.
- Ginger impairs cholesterol absorption to reduce serum & hepatic cholesterol levels. Ginger is also thought to stimulate 7-alpha-hydroxylase – the rate limiting enzyme in bile acid synthesis.
- Shogaol has been shown to act as an analgesic.
- Shogaol & zingiberene have been shown to have antibiotic effects against: Salmonella typhi, Vibrio cholera & Tricophyton violaceum. Aqueous extracts as dilute as 2.5% have demonstrated effectiveness against Trichomonas vaginalis.[2333]

Medical actions: Choleretic. Positive Inotropic & Chronotropic. GI Stimulant. Thermogenic. Antibiotic. Anti-inflammatory. Diaphoretic. General Stimulant. Rubefacient. Carminative. Expectorant. Analgesic.

Current & Traditional Medical uses:

In general, ginger: reduces nausea, stimulates circulatory activity, & inhibits arachidonic acid metabolism.

Ginger is particularly indicated in cases characterized by a: loss of appetite, flatulence, borborygmus (rumbling noise d/t propulsion of gas through the intestines), spasmodic gastric & intestinal contractions, painful menstruation, amenorrhea d/t cold, acute colds, cool extremities, & cold surface in children's diseases.[2334]

- **Ayurvedic Medicine** – Besides the above uses, ginger was also used topically for HA, toothache & to improve circulation to the limbs.
- **Chinese Medicine** – Fresh ginger was used to promote sweating & to disperse exterior cold that is caused by external influences upon the body. Fresh ginger is pungent & hot, & is used to treat vomiting, cough & debilitating sweating, & to reduce the poisionous effects of other herbs. It was commonly used for colds caused by pathogenic wind cold, which is characterized by: severe intolerance to cold, slight fever, HA, general ache, nasal congestion & a runny nose. Dried ginger is also pungent & hot, but is thought to be more effective at expelling interior cold conditions as they relate to the constitution of the client. Dried giner is used for cold conditions characterized by: pallor, poor appetite & digestion, cold limbs, vomiting, diarrhea, pale tongue, or thin, watery or white sputum.[2335]
- **Gastrointestinal Conditions**: Zingiber was employed as a stimulating tonic, stomachic, & carminative; increasing the secretion of gastric juices & the excitability of the alimentary muscular system. Ginger also helps to dispel gas that has accumulated in the stomach & bowels. It has been used in combination w/ astringents in the treatment of: diarrhea, dysentery, chronic flatulence &

atonic dyspepsia. The main use of Zingiber is to: relieve nausea, pains & cramps of the stomach & bowels, & tenesmus. Ginger is particulary indicated in conditions d/t colds or d/t ingestion of poor quality or difficult to digest foods. Atony of the GI, particularly the stomach, appears to be a principle indication. As a sialagogue, ginger is effective in treating paralysis of the tongue, toothache & a relaxed uvula. When prepared w/ Rheum, ginger was used in the treatment of cholera infantum, characterized by coldness of the surface & extremities, w/ assoc. nausea & vomiting. Zingiber is indicated for gastric sub acidity. [2336] Zingiber simultaneously improves
gastrointestinal motility while exerting antispasmodic effects. Zingiber has also been shown to inhibit serotonin-induced diarrhea.[2337] Zingiber also prevents ulcer formation caused by ethanol, indomethacin, aspirin & other common ulcerogenic compounds. This effect appears to be greater in the fresh rhizome. Other GI complaints calling for Zingiber include motion sickness, hyperemesis gravidum, post-operative nausea & vomiting.

- **Gynecologic Conditions:** Zingiber helps to relieve the pain of dysmenorrhea.
- **Infectious Conditions:** Zingiber was utilized in acute colds in conjunction w/ a hot mustard bath & wrapping in warm blankets afterwards.
- **Inflammatory Conditions:** Ginger was indicated in fevers with scanty salivary secretions & painful, gassy intestines. Ginger is thought to assist by sedating & re-establishing secretions. Benefit has been shown in the treatment of rheumatoid & osteoarthritis. Along with the effects on eicosanoids, Zingiber is a diaphoretic. Migraine headaches also respond to Zingiber. Compared to other antiinflammatory botanicals, such as Curcuma, smaller amounts of Zingiber are necessary for 5LOX inhibition. Higher doses are required for COX-2 inhibition.
- **Topical Applications:** Combined w/ the bark of Salix nigra, Zingiber was used as a poultice for indolent ulcers.
- **Cardiovascular Conditions**: Ginger has hypertensive effects in humans which may be due to a short term reflex response from the pungent effect.[2338]

Current Research Review:

- **Rheumatism and musculoskeletal disorders:** Fifty-six patients (28 with RA, 18 with OA, and 10 with muscular discomfort) used powdered ginger to relieve their symptoms for a period ranging from 3 months to 2.5 years. All patients with muscular discomfort experienced relief in pain, and more than ¾ patients with arthritis experienced relief in pain and swelling. No adverse effects were reported. Authors suggest that the mechanism of action may involve the inhibition of prostaglandin and leukotrine biosynthesis (dual inhibition of eicosanoid biosynthesis). [2339]
  - **Osteorthritis:**
    - A highly purified and standardized ginger extract (Zingiber officinale and Alpinia galangal, EV.EXT 77) had a statistically significant, moderate effect on reducing symptoms of OA on the knee, when administered for six weeks in a randomized double-blind, placebo-controlled, multi-center, parallel-group study. Two hundred sixty one patients with moderate-to-severe pain were enrolled. Some mild adverse GI effects were experienced.[2340]
    - Ginger extract was compared to placebo and Ibuprofen in patients with osteoarthritis of the hip or knee in a controlled, double blind, cross-over study with a wash-out period of one week followed by three treatment periods in a randomized sequence, each of three weeks duration. In the cross-over study, no significant difference between placebo and ginger extract could be demonstrated, while explorative tests of differences in the first treatment period showed a better effect of both Ibuprofen and ginger extract than placebo. There were no serious adverse events reported during the periods with active medications.[2341]
- **Nausea and vomiting**
  - Six studies were reviewed to assess the efficacy of ginger for nausea and vomiting. Ginger was found to be superior to placebo and equally effective as metoclopramide for post-operative nausea and vomiting in two of three studies. However, 1 g of ginger taken before operation did not reduce the risk of post-operative nausea compared to placebo. Other studies found ginger effective for sea-sickness, morning sickness, and chemotherapy-induced nausea.[2342]
  - **Motion Sickness:**
    - Ginger and other medications were compared with scopolamine and d-amphetamine for effectiveness in prevention of motion sickness. Ginger in the doses used was found to be at the placebo level of efficacy. The study concluded that scopolamine 0.6 mg with d-amphetamine 10 mg was the best combination with acceptable side effects.[2343] Controlled, double-blind study found that neither the vestibular nor the oculomotor system, both of which are of decisive importance in the occurrence of motion sickness, are influenced by ginger. They suggested that any reduction of motion-sickness symptoms derives from the influence of the ginger root agents on the gastric system.[2344]
  - **Morning Sickness:** Ginger was found to be effective in relieving the severity of nausea and vomiting of pregnancy in the dose of 1 g qd x 4 days in a randomized double-blind study, involving 70 women at or before 17 weeks' gestation. Nausea and vomiting episodes decreased without any adverse effect on pregnancy outcome.[2345]
  - **Postoperative nausea and vomiting:**

- Ginger powder in the dose of 2 g, droperidol 1.5 mg, or both were found ineffective in reducing the incidence of postoperative nausea and vomiting after day case of gynecological laparoscopy in 120 patients in a placebo-controlled trial.[2346]
- Ginger BP in the doses of 0.5 g or 1.0 g, given one hour prior to gynecological laparoscopic surgery under general anaesthesia, was found to be ineffective in reducing postoperative nausea and vomiting in 108 patients in a double-blind, randomized, controlled trial. All patients received oral diazepam premedication. The incidence of nausea and vomiting increased slightly but nonsignificantly with increasing dose of ginger.[2347]

- **Fibrinolysis:** Administration of 5 gm of ginger powder with fatty meals to 30 healthy adult volunteers increased fibrinolytic activity significantly.[2348]
- **Gastroduodenal motility:** Oral ginger was found to improve gastroduodenal motility in the fasting state and after a standard test meal in the dose of 100 mg in 12 healthy human volunteers.[2349]
- **Coronary artery disease/NIDDM:** Powdered ginger, 4g qd x 3 months, did not affect ADP- and epinephrine-induced platelet aggregation in patients with CAD. There were no changes in the fibrinolytic activity and fibrinogen level. A single dose of 10 g powdered ginger given to CAD patients produced a significant reduction in platelet aggregation induced by the two agonists. Ginger did not affect the blood lipids and blood sugar. Included in this study were healthy individuals, patients with CAD, and patients with NIDDM, who either had CAD or were without CAD.[2350]
- **Platelet aggregation**: Twenty healthy male volunteers were supplemented with 100 g butter for 7 days, which enhanced platelet aggregation to a significant extent. Five grams of dry ginger, administered in two divided doses with fatty meal to 10 volunteers significantly inhibited the platelet aggregation induced by ADP and epinephrine, compared to the placebo group (10 individual). Serum lipids remained unchanged in both the groups.[2351]
- **Breech presentation:** Fresh ginger paste applied to Zhihying acupoint in 133 pregnant women 28 to 38 weeks' gestation with breech position, was effective in correcting the fetal position with 77.4% correction rate (113 women). Control group of 238 women had spontaneous correction with 51.6% correction rate.[2352]

Pharmacy:[2353]
- Fresh root equivalent: 500-1000 mg TID
- Dried root equivalent: 500 mg BID-QID
- Ginger tablets (500 mg): 1 tab BID-QID
- Liquid extract: (1:2 → 0.7-2 ml QD; 1:5 → 1.7-5 ml QD)

Drug Interactions:[2354]
- 1.0 g powdered Zingiber administered 20 min. prior to surgery reduced anesthetic induced nausea.
- Decreases nausea induced by chemotherapeutic agents.
- Increases the absorption of some oral drugs (empirical).
- Inhibition of ulcer formation due to ethanal, indomethacin & aspirin.
- May enhance the action of anticoagulant medication such as warfarin due to inhibition of platelet COX products & platelet aggregation, although variable effect based on dose as 2 g appears to not have an effect where 10 g is significant; 4 g qd for 3 months did not elicit these effects.

Drug Interactions:
- Anticoagulant medications: 10g at one dose can extend bleeding time & decrease platelet aggregation. 6 g doses may be of concern. 4 g doses or less do not interfere. Another study with 1 g dose immediately prior to surgery to prevent post-op nausea has not affected bleeding indices. (Low Dog)
- Cyclophosphamide: Zingiber can decrease vomiting caused by cyclophosphamide [2355]
- Zingiber can increase the absorption of oral drugs.[2356]

Contraindications/Toxicity: People with sensitive stomachs do not always tolerate Zingiber. Contraindicated in gallstones (w/o physician supervision in the case of larger stones, acute Sx) & pregnancy (large doses, > 2 g doses).[2357] In pregnancy, large doses may inhibit thromboxane synthetase, impairing development of the male fetal brain.[2358] Caution in those w/ inflammatory skin diseases, high fever, bleeding or ulcers.[2359] There do not appear to be any toxic actions associated with Zingiber. Large doses may cause GI upset with dyspepsia, retrosternal burning in some patients.

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