

Wild Lettuce

Species (Family)

Lactuca virosa L. (Asteraceae/Compositae)

Synonym(s)

Bitter Lettuce, Lettuce Opium

Related *Lactuca* species include *Lactuca sativa* (Garden Lettuce), *Lactuca scariola* (Prickly Lettuce), *Lactuca altissima* and *Lactuca canadensis* (Wild Lettuce of America)

Part(s) Used

Leaf, latex

Pharmacopoeial and Other Monographs

BHC 1992^(G6)

BHP 1996^(G9)

Martindale 32nd edition^(G43)

PDR for Herbal Medicines 2nd edition^(G36)

Legal Category (Licensed Products)

GSL^(G37)

Constituents^(G6,G22,G48,G60,G64)

All parts of the plant contain a milky, white latex (sap) which, when collected and dried, forms the drug known as lactucarium.^(G33)

Acids Citric, malic and oxalic (up to 1%) acids; cichoric acid (phenolic).⁽¹⁾

Alkaloids Hyoscyamine, later disputed.^(2,G33) N-methyl- β -phenethylamine, also disputed.⁽²⁾

Coumarins Aesculin, cichoriin.⁽¹⁾

Flavonoids Flavones (e.g. apigenin, luteolin), flavonols (e.g. quercetin) and their glycosides.⁽¹⁾

Terpenoids Bitter principles including the sesquiterpene lactones lactucin and lactupicrin (lactucopicrin); β -amyrin, germanicol, and lactucone (lactucerin). Lactucone is a mixture of α - and β -lactuceroil acetates, β -lactuceroil being identical to taraxasterol.

Other constituents Mannitol, proteins, resins and sugars.

Food Use

Wild lettuce is not used in foods, although the related species *L. sativa* is commonly used as a salad ingredient.

Herbal Use

Wild lettuce is stated to possess mild sedative, anodyne and hypnotic properties. Traditionally, it has been used for insomnia, restlessness and excitability in children, pertussis, irritable cough, priapism, dysmenorrhoea, nymphomania, muscular or articular pains, and specifically for irritable cough and insomnia.^(G6,G7,G8,G42,G64)

Dosage

Dried leaves 0.5–3.0 g or by infusion three times daily.^(G6)

Liquid extract 0.5–3.0 mL (1:1 in 25% alcohol) three times daily.^(G6)

Lactucarium (dried latex extract) (BPC 1934) 0.3–1.0 g three times daily.

Soft extract (BPC 1934) 0.3–1.0 g three times daily.

Pharmacological Actions

In vitro and animal studies

Lactucarium has been noted to induce mydriasis.^(G6) This effect may be attributable to hyoscyamine, although the dried sap is reportedly devoid of this alkaloid.

An alcoholic extract of a related species, *L. sativa*, has exhibited a sedative effect in toads, causing a reduction in motor activity and behaviour.⁽³⁾ Higher doses resulted in flaccid paralysis. In addition, an antispasmodic action on isolated smooth and striated muscle, and *in vitro* negative chronotropic and inotropic effects on normal and stressed (tachycardic) hearts were observed. The antispasmodic action was noted to be antagonised by calcium.

Lactucin, lactupicrin and hyoscyamine have all been proposed as the sedative components in wild lettuce. However in the above study,⁽³⁾ the active component was uncharacterised and acted mainly peripherally, not readily crossing the blood-brain barrier. The suggested mode of action was via interference with basic excitatory processes common to neural and muscular functions, and not via a neuromuscular block.

Low amounts (nanograms) of morphine have been detected in *Lactuca* species, although the concentrations involved are considered too low to exert any obvious pharmacological effect.^(G60)

Side-effects, Toxicity

None documented for *L. virosa*. Wild lettuce contains sesquiterpene lactones which are potentially allergenic.^(G19) Occupational dermatitis has been documented for *L. sativa* together with an urticarial eruption after ingestion of the leaves.^(4-6,G51) The milky sap of *L. sativa* is reported to be irritant.^(G51)

The toxicity of wild lettuce is stated to be low.

Consumption of large amounts of *L. scariola* has caused poisoning in cattle, who developed pulmonary emphysema, severe dyspnoea, and weakness.⁽⁷⁾ Only the immature plants were reported to be toxic.

L. sativa has been reported to produce only negative responses when tested for mutagenicity using the Ames test (*Salmonella typhimurium* TA98, TA100).⁽⁸⁾

Contra-indications, Warnings

Overdosage may produce poisoning^(G42) involving stupor, depressed respiration, coma and even death. Wild lettuce may cause an allergic reaction in sensitive individuals, in particular those with an existing sensitivity to other members of the Asteraceae/Compositae family.

Pregnancy and lactation The safety of wild lettuce has not been established. In view of the lack of toxicity data and the possibility of allergic reactions, excessive use of wild lettuce during pregnancy and lactation should be avoided.

Pharmaceutical Comment

The chemistry of wild lettuce is well documented although it is not clear which constituents represent the active components. Early reports of hyoscyamine as a constituent have not been substantiated by subsequent study. No published information was found to support the traditional herbal uses of wild lettuce, although a sedative action in toads has been reported for a related species *L. sativa*. In view of the potential allergenicity of wild lettuce and the lack of toxicity data, excessive use should be avoided.

References

See also General References G6, G9, G10, G19, G22, G31, G33, G36, G37, G42, G43, G48, G51, G60 and G64.

- 1 Rees S, Harborne JB. Flavonoids and other phenolics of *Cichorium* and related members of the Lactuceae (Compositae). *Bot J Linn Soc* 1984; 89: 313-319.
- 2 Huang Z-J *et al.* Studies on herbal remedies I: Analysis of herbal smoking preparations alleged to contain lettuce (*Lactuca sativa* L.) and other natural products. *J Pharm Sci* 1982; 71: 270-271.
- 3 González-Lima F *et al.* Depressant pharmacological effects of a component isolated from lettuce, *Lactuca sativa*. *Int J Crude Drug Res* 1986; 24: 154-166.
- 4 Krook G. Occupational dermatitis from *Lactuca sativa* (lettuce) and *Cichorium* (endive). *Contact Dermatitis* 1977; 3: 27-36.
- 5 Rinkel HJ, Balyeat RM. Occupational dermatitis due to lettuce. *JAMA* 1932; 98: 137-138.
- 6 Zeller W *et al.* The sensitizing capacity of compositae plants 6. Guinea pig sensitization experiments with ornamental plants and weeds using different methods. *Arch Dermatol Res* 1985; 277: 28-35.
- 7 Anon *Poisindex* CD-ROM 1995; 85. Denver: Micromedex.
- 8 White RD *et al.* An evaluation of acetone extracts from six plants in the Ames mutagenicity test. *Toxicol Lett* 1983; 15: 26-31.