

Meadowsweet

Species (Family)

Filipendula ulmaria (L.) Maxim. (Rosaceae)

Synonym(s)

Dropwort, Filipendula, Queen of the Meadow, *Spiraea ulmaria* L.

Part(s) Used

Herb

Pharmacopoeial and Other Monographs

BHC 1992^(G6)

BHP 1996^(G9)

Complete German Commission E^(G3)

Martindale 32nd edition^(G43)

PDR for Herbal Medicines 2nd edition^(G36)

Legal Category (Licensed Products)

GSL^(G37)

Constituents^(G2,G6,G22,G42,G62,G64)

Flavonoids Flavonols, flavones, flavanones and chalcone derivatives (e.g. hyperoside⁽¹⁾ and spiroside,⁽²⁾ kaempferol glucoside⁽³⁾ and avicularin.⁽⁴⁾

Salicylates Main components of the volatile oil including salicylaldehyde (major, up to 70%), gaultherin, isosalicin, methyl salicylate, monotropitin, salicin, salicylic acid and spirein.⁽⁵⁻⁸⁾

Tannins 1% (alcoholic extract), 12.5% (aqueous extract).⁽⁵⁾ Hydrolysable type;⁽⁹⁾ leaf extracts have also yielded catechols,⁽¹⁾ compounds normally associated with condensed tannins.

Volatile oils Many phenolic components including salicylates (see above), benzyl alcohol, benzaldehyde, ethyl benzoate, heliotropin, phenylacetate, vanillin.^(4,5)

Other constituents Coumarin (trace),⁽¹⁾ mucilage, carbohydrates and ascorbic acid (vitamin C).

Food Use

Meadowsweet is listed by the Council of Europe as a natural source of food flavouring (category N2). This category indicates that meadowsweet can be added to foodstuffs in small quantities, with a possible limitation of an active principle (as yet unspecified) in the final product.^(G16) In the USA, meadowsweet is listed by the Food and Drugs Administration (FDA) as a Herb of Undefined Safety.^(G22)

Herbal Use

Meadowsweet is stated to possess stomachic, mild urinary antiseptic, antirheumatic, astringent and antacid properties. Traditionally, it has been used for atonic dyspepsia with heartburn and hyperacidity, acute catarrhal cystitis, rheumatic muscle and joint pains, diarrhoea in children, and specifically for the prophylaxis and treatment of peptic ulcer.^(G2,G6,G7,G8,G64)

Dosage

Dried herb 4–6 g or by infusion three times daily.^(G6,G7)

Liquid extract 1.5–6.0 mL (1:1 in 25% alcohol) three times daily.^(G6,G7)

Tincture 2–4 mL (1:5 in 45% alcohol) three times daily.^(G6,G7)

Pharmacological Actions

In vitro and animal studies

Lowering of motor activity and rectal temperature, myorelaxation and potentiation of narcotic action have been documented for meadowsweet.⁽⁵⁾ In addition, flower extracts have been reported to prolong life expectancy of mice, lower vascular permeability and prevent the development of stomach ulcers in rats and mice.^(5,10,11) However, meadowsweet has also been reported to potentiate the ulcerogenic properties of histamine in the guinea-pig.⁽¹⁰⁾ The anti-ulcer action documented for meadowsweet is associated with the aqueous extract and greatest activity has been observed with the flowers.^(9,11) Meadowsweet has been reported to increase bron-

chial tone in the cat⁽⁹⁾ and to potentiate the bronchospastic properties of histamine in the guinea-pig.⁽⁹⁾ *In vitro*, meadowsweet has been reported to increase intestinal tone in the guinea-pig and uterine tone in the rabbit.⁽⁹⁾

Bacteriostatic activity against *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Escherichia coli*, *Proteus vulgaris* and *Pseudomonas aeruginosa* has been documented for flower extracts.⁽¹²⁾

Tannins are generally considered to possess astringent properties and have been reported as constituents of meadowsweet. Meadowsweet is stated to promote uric acid excretion.^(G42)

Side-effects, Toxicity

None documented.

Contra-indications, Warnings Salicylate constituents have been documented and therefore the usual precautions recommended for salicylates are relevant for meadowsweet (see Willow). Meadowsweet is stated to be used for the treatment of diarrhoea in children but in view of the salicylate constituents, this is not advisable.

Bronchospastic activity has been documented and meadowsweet should therefore be used with caution by asthmatics.

Aqueous extracts have been reported to contain high tannin concentrations and excessive consumption should therefore be avoided.

Pregnancy and lactation *In vitro* utero-activity has been documented for meadowsweet. In view of the salicylate constituents and the lack of toxicity data, the use of meadowsweet during pregnancy and lactation should be avoided.

Pharmaceutical Comment

The chemistry of meadowsweet is characterised by a number of phenolic constituents including flavonoids, salicylates and tannins. Documented scientific evidence justifies some of the antiseptic, antirheumatic and astringent actions, although no human data were available. No documented toxicity data were located for meadowsweet and in view of this, excessive use should be avoided.

References

See also General References G2, G3, G5, G6, G9, G16, G22, G31, G36, G37, G42, G43, G50, G56, G62 and G64.

- 1 Genic AY, Ladnaya LY. Phytochemical study of *Filipendula ulmaria* Maxim. and *Filipendula hexapetala* Gilib. of flora of the Lvov region. *Farm Zh (Kiev)* 1980; 1: 50–52.
- 2 Novikova NN. Use of *Filipendula ulmaria* in medicine. *Tr Perm Farm Inst* 1969; 267–270.
- 3 Scheer T, Wichtl M. Zum Vorkommen von Kämpferol-4'-O-β-D-glucopyranoside in *Filipendula ulmaria* und *Allium cepa*. *Planta Med* 1987 53: 573–574.
- 4 Syuzeva ZF, Novikova NN. Flavonoid composition of *Filipendula ulmaria* queen-of-the meadow. *Nauch Tr Perm Farm Inst* 1973; 5: 2–26.
- 5 Barnaulov OD *et al.* Chemical composition and primary evaluation of the properties of preparations from *Filipendula ulmaria* (L.) Maxim flowers. *Rastit Resur* 1977; 13: 661–669.
- 6 Saifullina NA, Kozhina IS. Composition of essential oils from flowers of *Filipendula ulmaria*, *F. denudata*, and *F. stepposa*. *Rastit Resur* 1975; 11: 542–544.
- 7 Thieme H. Isolierung eines neuen phenolischen glykosids aus den blüten von *Filipendula ulmaria* (L.) Maxim. *Pharmazie* 1966; 21: 123.
- 8 Valle MG *et al.* Das ätherische öl aus *Filipendula ulmaria*. *Planta Med* 1988; 54: 181–182.
- 9 Barnaulov OD *et al.* Preliminary evaluation of the spasmolytic properties of some natural compounds and galenic preparations. *Rastit Resur* 1978; 14: 573–579.
- 10 Barnaulov OD, Denisenko PP. Antiulcerogenic action of the decoction from flowers of *Filipendula ulmaria* (L.). *Pharmakol-Toxicol (Moscow)* 1980; 43: 700–705.
- 11 Yanutsh AY *et al.* A study of the antiulcerative action of the extracts from the supernatant part and roots of *Filipendula ulmaria*. *Farm Zh (Kiev)* 1982; 37: 53–56.
- 12 Catanicin-Hintz I *et al.* Action of some plant extracts on the bacteria involved in urinary infections. *Clujul-Med* 1983; 56: 381–384.