

Bogbean

Species (Family)

Menyanthes trifoliata L. (Menyanthaceae)

Synonym(s)

Buckbean, Marsh Trefoil, Menyanthes

Part(s) Used

Leaf

Pharmacopoeial and Other Monographs

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,G62,G64)

Acid Caffeic acid, chlorogenic acid, ferulic acid, *p*-hydroxybenzoic acid, protocatechuic acid, salicylic acid, vanillic acid;^(1,2) folic acid and palmitic acid.⁽²⁾

Alkaloids Gentianin and gentianidine (pyridine-type); choline.⁽²⁾

Coumarins Scopoletin.⁽²⁾

Flavonoids Hyperin, kaempferol, quercetin, rutin and trifolioside.^(1,2)

Iridoids 7',8'-Dihydrofoliamenthin, foliamenthin, loganin, menthialofin and sweroside.⁽²⁻⁴⁾

Other constituents Carotene, ceryl alcohol, enzymes (e.g. emulsin, invertin), α -spinasterol, an unidentified substance with haemolytic properties.⁽²⁾ α -Spinasterol has been reported to be a mixture of five sterols with α -spinasterol and stigmast-7-enol as major components.⁽⁵⁾

Food Use

Bogbean is listed by the Council of Europe as a natural source of food flavouring (category N2). This category indicates that bogbean can be added to foodstuffs in small quantities, with a possible limitation of an active principle (as yet unspecified) in the final product.^(G16)

Herbal Use

Bogbean is stated to possess bitter and diuretic properties. It has been used for rheumatism, rheumatoid arthritis, and specifically for muscular rheumatism associated with general asthenia.^(G2,G7,G8,G64)

Dosage

Dried leaf 1–2 g or by infusion three times daily.^(G7)

Liquid extract 1–2 mL (1:1 in 25% alcohol) three times daily.^(G7)

Tincture 1–3 mL (1:5 in 45% alcohol) three times daily.^(G7)

Pharmacological Actions

In vitro and animal studies

A choleric action has been described for caffeic acid and ferulic acid; a stomachic secretive action has been reported for protocatechuic acid and *p*-hydroxybenzoic acid. The iridoids possess bitter properties.⁽¹⁾ The bitter index (BI) of bogbean is stated to be 4000–10 000 (compared to gentian BI 10 000–30 000).^(G62) Bogbean extracts have antibacterial activities.^(6,7)

Side-effects, Toxicity

Large doses of bogbean are stated to be purgative and may cause vomiting.⁽⁸⁾ An unidentified substance with haemolytic activity has been isolated from bogbean.⁽²⁾

Contra-indications, Warnings

Excessive doses may be irritant to the gastrointestinal tract, causing diarrhoea, griping pains, nausea and vomiting.⁽⁸⁾

Pregnancy and lactation The safety of bogbean has not been established. In view of the lack of toxicity data and possible purgative action, the use of bogbean during pregnancy and lactation should be avoided.

Pharmaceutical Comment

The chemistry of bogbean is well studied, but no pharmacological information is available to justify the herbal uses. In view of the lack of toxicity data, excessive doses should be avoided.

References

See also General References G2, G3, G8, G9, G16, G31, G36, G37, G43, G56, G62 and G64.

- 1 Swiatek L *et al.* Content of phenolic acids in leaves of *Menyanthes trifoliata*. *Planta Med* 1986; 52: 530.

- 2 Giaceri G. Chromatographic identification of coumarin derivatives in *Menyanthes trifoliata* L. *Fitoterapia* 1972; 43: 134–138.
- 3 Battersby AR *et al.* Seco-cyclopentane glucosides from *Menyanthes trifoliata*: foliamenthin, dihydrofoliamenthin, and menthiafolin. *Chem Commun* 1968; 1277–1280.
- 4 Loew P *et al.* The structure and biosynthesis of foliamenthin. *Chem Commun* 1968; 1276–1277.
- 5 Popov S. Sterols of the Gentianaceae family. *Dokl Bolg Akad Nauk* 1969; 22: 293–296.
- 6 Moskalenko SA. Preliminary screening of Far-Eastern ethnomedicinal plants for antibacterial activity. *J Ethnopharmacol* 1986; 15: 231–259.
- 7 Bishop CJ, MacDonald RE. A survey of higher plants for antibacterial substances. *Can J Bot* 1951; 29: 260–269.
- 8 Todd RG, ed. *Martindale: The Extra Pharmacopoeia*, 25th edn. London: Pharmaceutical Press, 1967.