Eyebright

Species (Family)

Euphrasia species including
(i) *Euphrasia brevipila* Burnat & Gremli
(ii) *Euphrasia officinalis* L.
(iii) *Euphrasia rostkoviana* Hayne (Scrophulariaceae)

Synonym(s)

Euphrasia

Part(s) Used

Herb

Pharmacopoeial and Other Monographs

BHP 1983[G7]
Mills and Bone[G50]
PDR for Herbal Medicines 2nd edition[G36]

Legal Category (Licensed Products)

Eyebright is not included in the GSL.[G37]

Constituents[G2,G22,G40,G64]

Unless otherwise stated, constituents listed are for *E. officinalis*.

Acids Caffeic acid, ferulic acid.[1]

Alkaloids Unidentified tertiary alkaloids, choline, steam volatile bases[1]

Amino acids Glycine, leucine and valine.

Flavonoids Four compounds (unidentified). Quercetin and rutin stated to be absent.[1] Quercetin, quercitrin and rutin have been documented for *E. rostkoviana*.

Iridoids Aucubin 0.05%. Additional glycosides have been reported for related *Euphrasia* species including catalpol, euphroside, eurostoside, geniposide, ixoroside and mussaenoside for *E. rostkoviana*.[2–5]

Phenethyl glycosides Dehydroconiferyl alcohol-4-β-D-glucoside[3] and eukovoside (3,4-dihydroxy-4-phenethyl-O-α-L-rhamnoside(13)-4-O-isoferuoyl-β-D-glucoside)[4] from *E. rostkoviana*.

Tannins About 12%. Condensed and hydrolysable; gallic acid is among the hydrolysis products.[1]

Volatile oils About 0.2%. Seven major and numerous minor components, mainly unidentified; four of the major compounds are thought to be aldehydes or ketones.[1]

Other constituents Bitter principle, β-carotene, phytosterols (e.g. β-sitosterol, stigmasterol),[1] resin, carbohydrates (e.g. arabinose, glucose, galactose) and vitamin C.

Food Use

Eyebright is listed by the Council of Europe as a natural source of food flavouring (category N3). This category indicates that eyebright can be added to foodstuffs in the traditionally accepted manner, although there is insufficient information available for an adequate assessment of potential toxicity.[G16]

Herbal Use

Eyebright is stated to possess anticatarrhal, astringent and anti-inflammatory properties. Traditionally it has been used for nasal catarrh, sinusitis and specifically for conjunctivitis when applied locally as an eye lotion.[G2,G7,G64]

Dosage

Dried herb 2–4 g or by infusion three times daily.[G7]

Liquid extract 2–4 mL (1 : 1 in 25% alcohol) three times daily.[G7]

Tincture 2–6 mL (1 : 5 in 45% alcohol) three times daily.[G7]

Pharmacological Actions

In vitro and animal studies

None documented for eyebright. Caffeic acid is bacteriostatic,[1] and a purgative action in mice has

been documented for iridoid glycosides.[6] The purgative action of aucubin is approximately 0.05 times the potency of sennosides, with onset of diarrhoea stated to occur more than 6 hours after aucubin administration.[6] Tannins are known to possess astringent properties.

Side-effects, Toxicity

It has been stated that 10–60 drops of eyebright tincture could induce toxic symptoms including mental confusion and cephalalgia, raised pressure in the eyes with lachrymation, pruritus, redness, swelling of the eyelid margins, dim vision, photophobia, weakness, sneezing, nausea, toothache, constipation, cough, dyspnoea, insomnia, polyuria and diaphoresis.[G22]

Contra-indications, Warnings

The use of eyebright for ophthalmic application has been discouraged.[G60]

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

Pharmaceutical Comment

Limited information is available regarding the constituents of eyebright and it is unclear which *Euphrasia* species is most commonly utilised. In addition, eyebright is also used as a common name for plants other than *Euphrasia* species. Little scientific information was found to justify the reputed herbal uses, although tannin constituents would provide an astringent effect. The use of home-made preparations for ophthalmic purposes should be avoided. Little is known regarding the toxicity of eyebright and, in view of the reported presence of unidentified alkaloids, it should be used with caution avoiding excessive doses.

References

See also General References G2, G7, G16, G22, G31, G32, G36, G37, G40, G44, G50, G60 and G64.

1 Harkiss KJ, Timmins P. Studies in the Scrophulariaceae Part VIII. Phytochemical investigation of *Euphrasia officinalis*. *Planta Med* 1973; 23: 342–347.

2 Sticher O, Salama O. Iridoid glucosides from *Euphrasia rostkoviana*. *Planta Med* 1981; 42: 122–123.

3 Salama O *et al.* A lignan glucoside from *Euphrasia rostkoviana*. *Phytochemistry* 1981; 20: 2003–2004.

4 Sticher O *et al.* Structure analysis of eukovoside, a new phenylpropanoid glycoside from *Euphrasia rostkoviana*. *Planta Med* 1982; 45: 159.

5 Salama O, Sticher O. Iridoidglucoside von *Euphrasia rostkoviana* 4. Mitteilung über Euphrasia-Glykoside. *Planta Med* 1983; 47: 90–94.

6 Inouye H *et al.* Purgative activities of iridoid glycosides. *Planta Med* 1974; 25: 285–288.