Drosera

Species (Family)

Drosera rotundifolia L. (Droseraceae)

Synonym(s)

Sundew

Part(s) Used

Herb

Pharmacopoeial and Other Monographs

BHP 1983[G7]
Complete German Commission E (Sundew)[G3]
Martindale 32nd edition[G43]
PDR for Herbal Medicines 2nd edition (Sundew)[G36]

Legal Category (Licensed Products)

Drosera is not included in the GSL.[G37]

Constituents[G2,G40,G48,G53,G64]

Flavonoids Kaempferol, myricetin, quercetin and hyperoside.[1]

Quinones Plumbagin,[2] hydroplumbagin glucoside[3] and rossoliside (7-methyl-hydrojuglone-4-glucoside).[4]

Other constituents Carotenoids, plant acids (e.g. butyric acid, citric acid, formic acid, gallic acid, malic acid, propionic acid), resin, tannins (unspecified) and ascorbic acid (vitamin C).

Food Use

Drosera is not used in foods.

Herbal Use

Drosera is stated to possess antispasmodic, demulcent and expectorant properties. It has been used for bronchitis, asthma, pertussis, tracheitis, gastric ulceration and specifically for asthma and chronic bronchitis with peptic ulceration or gastritis.[G2,G7,G64]

Dosage

Dried plant 1–2 g or by infusion three times daily.[G7]

Liquid extract 0.5–2.0 mL (1 : 1 in 25% alcohol) three times daily.[G7]

Tincture 0.5–1.0 mL (1 : 5 in 60% alcohol) three times daily.[G7]

Pharmacological Actions

In vitro and animal studies

Drosera is reported to prevent acetylcholine- or histamine-induced bronchospasm, and to relax acetylcholine- or barium chloride-induced spasm of the isolated intestine.[5] Drosera is stated to possess antitussive properties and has been reported to prevent coughing induced by excitation of the larynx nerve in the rabbit.[5] These antispasmodic actions have been attributed to the naphthoquinone constituents.[G53]

Antimicrobial properties have also been documented for the naphthoquinones.[6] *In vivo*, plumbagin is reported to exert a broad spectrum of activity against Gram-positive and Gram-negative bacteria, influenza viruses, pathogenic fungi, and parasitic protozoa. *In vitro*, a plumbagin solution (1 : 50 000) was reported to exhibit activity against staphylococci, streptococci and pneumococci (Gram-positive bacteria), but to lack activity against *Haemophilus pertussis* (Gram-negative bacteria).[5] Plumbagin administered orally to mice for five days, was found to be ineffective against *Lamblia muris* and tuberculosis infection. *Microsporum* infections in guinea-pigs were treated successfully by local applications of 0.25–0.5% solutions (in 40% alcohol) or of 1% emulsions.[6]

An aqueous drosera extract was reported to possess pepsin-like activity.[G53]

In vitro, drosera extracts and plumbagin, in concentrations of 0.01–1.0 mg/mL, have been documented to exert a cytotoxic or immunosuppressive effect in human granulocytes and lymphocytes.[2] Lower concentrations were reported to exhibit immunostimulating properties. Plumbagin possesses chemotherapeutic properties, but is irritant when administered at therapeutic doses.[6]

Side-effects, Toxicity

None documented for drosera. Plumbagin is stated to be an irritant principle[G51] and an LD_{50} (mice, intraperitoneal injection) has been reported to be 15 mg/kg body weight.[G48]

Cytotoxic properties have been documented for drosera and plumbagin (*see In vitro* and animal studies).

Contra-indications, Warnings

None documented.

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

Pharmaceutical Comment

Limited chemical information is available for drosera. Documented animal studies support some of the herbal uses. Reported immunostimulant and immunosuppressant activities may warrant further research into the pharmacological activities of drosera. In view of the lack of chemical and toxicity data, excessive use of drosera should be avoided.

References

See also General References G2, G3, G7, G31, G36, G37, G40, G43, G45, G48, G51, G53 and G64.

1 Ayuga C *et al.* Contribución al estudio de flavonoides en *D. rotundifolia* L. *An R Acad Farm* 1985; 51: 321–326.

2 Wagner H *et al.* Immunological investigations of naphthoquinone-containing plant extracts, isolated quinones and other cytostatic compounds in cellular immunosystems. *Phytochem Soc Eur Symp* 1986; 43.

3 Vinkenborg J *et al.* De aanwezigheid van hydroplumbagin-glucoside in *Drosera rotundifolia*. *Pharm Weekbl* 1969; 104: 45–49.

4 Sampara-Rumantir N. Rossoliside. *Pharm Weekbl* 1971; 106: 653–664.

5 Oliver-Bever B. *Plants in Tropical West Africa*. Cambridge University Press: Cambridge, 1986: 129.

6 Vichkanova SA *et al.* Chemotherapeutic properties of plumbagin. In: Aizenman BE, ed. *Fitontsidy Mater Soveshch, 6th 1969*. Kiev: Naukova Dumka, 1972: 183–185.