Uva-Ursi

Species (Family)
Arctostaphylos uva-ursi (L.) Spreng (Ericaceae)

Synonym(s)
Bearberry

Part(s) Used
Leaf

Pharmacopoeial and Other Monographs
BHC 1992(G6)
BHP 1996(G9)
BP 2001(G15)
Complete German Commission E(G3)
ESCAP 1997(G52)
Martindale 32nd edition(G43)
Mills and Bone(G50)
PDR for Herbal Medicines 2nd edition(G36)
Ph Eur 2002(G28)

Legal Category (Licensed Products)
GSL(G37)

Constituents(G2,G6,G22,G41,G62,G64)

Flavonoids Flavonols (e.g. myricetin, quercetin) and their glycosides including hyperin, isoquercitrin, myricitrin and quercitrin.

Iridoids Asperuloside (disputed), monotropein.(1)

Quinones Total content at least 6%, mainly arbutin (5–15%) and methyl-arbutin (glycosides), with lesser amounts of piceoside(2) (a glycoside), free hydroquinone and free p-methoxyphenol.(3)

Tannins 6–7% (range 6–40%). Hydrolysable-type (e.g. corilagin pyranoside); ellagic and gallic acids (usually associated with hydrolysable tannins).

Terpenoids α-Amyrin, α-amyrin acetate, β-amyrin, lupeol, uvaol, ursolic acid, and a mixture of mono- and di-ketonic α-amyrin derivatives.(4,5)

Other constituents Acids (malic, quinic), allantoin, resin (e.g. ursone), volatile oil (trace) and wax.

Other plant parts The root is reported to contain unedoside (iridoid glucoside).(6)

Food Use
Uva-ursi is not used in foods.

Herbal Use
Uva-ursi is stated to possess diuretic, urinary antiseptic, and astringent properties. Traditionally, it has been used for cystitis, urethritis, dysuria, pyelitis, lithuria, and specifically for acute catarrhal cystitis with dysuria and highly acidic urine.(G2,G6,G7,G8,G64)

Dosage
Dried leaves 1.5–4.0 g or by infusion three times daily.(G6,G)

Liquid extract 1.5–4.0 mL (1:1 in 25% alcohol) three times daily.(G6,G)

Concentrated Infusion of Bearberry (BPC 1934) 2–4 mL.

Fresh Infusion of Bearberry (BPC 1934) 15–30 mL.

Pharmacological Actions

In vitro and animal studies
Uva-ursi has exhibited antimicrobial activity towards a variety of organisms including Staphylococcus aureus, Bacillus subtilis, Escherichia coli, Mycobacterium smegmatis, Shigella sonnei and Shigella flexneri.(7) The antimicrobial activity of arbutin towards bacteria implicated in producing urinary tract infections, has been found to be directly dependent on the β-glucosidase activity of the infective organism.(7) The minimum inhibitory concentration for arbutin is reported to be 0.4–0.8% depending on the micro-organism.(8) Aqueous and methanolic extracts have demonstrated molluscicidal activity against Biomphalaria glabrata,
at a concentration of 50 ppm. The activity was attributed to the tannin constituents (condensed and hydrolysable).

Anti-inflammatory activity (rat paw oedema tests) has been documented for uva-ursi against a variety of chemical inducers such as carrageenan, histamine and prostaglandins.

Uva-ursi failed to exhibit any in vitro uterotonic action when tested on rabbit and guinea-pig uteri.

Hydroquinone has been reported to show a dose-dependent cytotoxic activity on cultured rat hepatoma cells (HTC line); arbutin was not found to inhibit growth of the HTC cells. It was stated that hydroquinone appeared to have greater cytotoxic activity towards rat hepatoma cells than agents like azauridin or colchicine, but less than valtrate from valerian (Valeriana officinalis). The cytotoxicity of hydroquinone has also been tested on L1210, CA-755 and S-180 tumour systems.

Clinical studies
A herbal preparation, whose ingredients included uva-ursi, hops and peppermint, has been used to treat patients suffering from compulsive strangury, enuresis and painful micturition. Of 915 patients treated for six weeks, success was reported in about 70%. The antiseptic and diuretic properties claimed for uva-ursi can be attributed to the hydroquinone derivatives, especially arbutin. The latter is absorbed from the gastrointestinal tract virtually unchanged and during renal excretion is hydrolysed to yield the active principle, hydroquinone, which exerts an antiseptic and astringent action on the urinary mucous membranes. The crude extract is reported to be more effective than isolated arbutin as an astringent and antiseptic. This may be due to the other hydroquinone derivatives, in addition to arbutin, that are present in the crude extract and which will also yield hydroquinone. Furthermore, it has been stated that the presence of gallic acid in the crude extract may prevent β-glucosidase cleavage of arbutin in the gastrointestinal tract before absorption, thereby increasing the amount of hydroquinone released during renal excretion.

Side-effects, Toxicity
No reported side-effects were located. Hydroquinone is reported to be toxic if ingested in large quantities: 1 g (equivalent to 6–20 g plant material) has caused tinnitus, nausea and vomiting, sense of suffocation, shortness of breath, cyanosis, convulsions, delirium and collapse. A dose of 5 g (equivalent to 30–100 g of plant material) has proved fatal.

References
See also General References G2, G3, G5, G6, G9, G10, G22, G25, G31, G32, G33, G36, G37, G41, G42, G43, G48, G50, G52, G56, G62 and G64.

1 Jahodár L et al. Investigation of iridoid substances in Arctostaphylos uva-ursi. Pharmazie 1978; 33:


