

Agrimony

Species (Family)

Agrimonia eupatoria L. (Rosaceae)

Synonym(s)

Agrimonia

Part(s) Used

Herb

Pharmacopoeial and Other Monographs

BHP 1996^(G9)

Complete German Commission E^(G3)

PDR for Herbal Medicines 2nd edition^(G36)

Legal Category (Licensed Products)

GSL^(G37)

Constituents^(1,2,G2,G22,G31,G40,G64)

Acids Palmitic acid, salicylic acid, silicic acid and stearic acid.

Flavonoids Apigenin, luteolin, luteolin-7-glucoside, quercetin, quercitrin, kaempferol and glycosides.⁽³⁾

Tannins 3–21%. Condensed tannins in herb; hydrolysable tannins (e.g. ellagitannin).

Vitamins Ascorbic acid (vitamin C), nicotinamide complex (about 100–300 µg/g leaf), thiamine (about 2 µg/g leaf) and vitamin K.

Other constituents Bitter principle, triterpenes (e.g. α-amyrin, ursolic acid, euscaptic acid), phytosterols and volatile oil 0.2%.

Food Use

Agrimony is listed by the Council of Europe as a natural source of food flavouring (category N2). This category indicates that agrimony 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

Agrimony is stated to possess mild astringent and diuretic properties.⁽¹⁾ It has been used for diarrhoea in children, mucous colitis, grumbling appendicitis, urinary incontinence, cystitis, and as a gargle for acute sore throat and chronic nasopharyngeal catarrh.^(G2,G7)

Dosage

Dried herb 2–4 g by infusion three times daily.^(G7)

Liquid extract 1–3 mL (1:1 in 25% alcohol) three times daily.^(G7)

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

Pharmacological Actions

In vitro and animal studies

Significant uricolytic activity has been documented for agrimony infusions and decoctions (15% w/v), following their oral administration to male rats at a dose of 20 mL/kg body weight (equivalent to 3 g dry drug).⁽⁴⁾ Diuretic activity was stated to be minimal and elimination of urea unchanged. A hypotensive effect in anaesthetised cats has been documented for an agrimony extract given by intravenous injection; blood pressure was lowered by more than 40%.⁽⁵⁾

Marked antibacterial activity against *Staphylococcus aureus* and α-haemolytic streptococci has been reported for agrimony.⁽⁶⁾

An aqueous ethanol extract of the herb was tested for immunomodulative activity in the peritoneal cavities of mice.⁽⁷⁾ Immunostimulant activity resulted in an increase in phagocytic activity and increases in the activities of lysozyme and peroxidase. *Agrimonia eupatoria* given in the diet of mice for 12 days prior to intraperitoneal administration of streptozotocin resulted in a reduction in hyperglycaemia.⁽⁸⁾ Further investigation revealed stimulation of 2-deoxyglucose transport, glucose oxidation and incorporation of glucose into glycogen in mouse abdominal muscle. An aqueous extract (0.25–1 mg/mL) stimulated insulin secretion from a BRIN-BD11 pancreatic B cell line.⁽⁹⁾ These findings demonstrate that *A. eupatoria* aqueous extract given orally to mice

has antihyperglycaemic, insulin-releasing and insulin-like activity.⁽⁹⁾

A related species, *A. pilosa*, has also been investigated. *In vivo* antitumour activity in mice has been attributed to the tannin agrimoniin⁽¹⁰⁾ which has not been reported as a constituent of *A. eupatoria*. Agrimoniin was administered intraperitoneally into ascites-type and solid tumours in rodents.⁽¹¹⁾ At doses of greater than 10 mg/kg, given before or after intraperitoneal inoculation with MM2 cells, it completely rejected tumour growth in mice.⁽¹¹⁾ Solid tumours of MH134 and Meth-A were inhibited by agrimoniin, and the number of peripheral blood cells was increased, indicating that agrimoniin has antitumour activity and that it exerts its effect by enhancing the immune response. *In vitro* studies have reported that agrimoniin induces the cytotoxicity of murine peritoneal exudate cells,⁽¹²⁾ and that it induces interleukin 1 in human peripheral blood mononuclear cells and in mouse adherent peritoneal exudate cells *in vivo*.⁽¹³⁾ Several phloroglucinols isolated from *A. pilosa* have demonstrated activity against *Staphylococcus aureus*,⁽¹⁴⁾ and a methanol extract of the herb inhibited HIV-1 protease activity.⁽¹⁵⁾ An aqueous suspension of *A. pilosa* herb (1 mg/kg and 5 mg/kg) given orally or intraperitoneally significantly reduced blood glucose concentrations in streptozotocin-induced diabetic rats.⁽¹⁶⁾

Clinical studies

The successful treatment of cutaneous porphyria in a group of 20 patients receiving agrimony infusions has been described.⁽¹⁷⁾ An improvement in skin eruptions together with a decrease in serum iron concentrations and in urinary porphyrins was noted.

A compound herb preparation containing agrimony has been used to treat 35 patients suffering from chronic gastroduodenitis.⁽¹⁸⁾ After 25 days of therapy, 75% of patients claimed to be free from pain, 95% from dyspeptic symptoms and 76% from palpitation pains. Gastroscopy was said to indicate that previous erosion and haemorrhagic mucous changes had healed. No side-effects or signs of toxicity were documented.

Side-effects, Toxicity

None documented for *A. eupatoria*. A polar fraction containing flavonoids and triterpenes, but not tannins, produced a negative result in the Ames test.⁽¹⁾

In mice, agrimoniin has been documented to cause stretching and writhing reactions when administered by intraperitoneal injection, and cyanosis and necrosis at the site of intravenous injection.⁽¹¹⁾ These reactions were considered to be inflammatory reac-

tions. The LD₅₀ of agrimoniin in mice has been estimated as 33 mg/kg (by intravenous injection), 101 mg/kg (by intraperitoneal injection), and greater than 1 g/kg (by mouth).⁽¹¹⁾ Cytotoxic activity has been reported for *A. pilosa*⁽¹⁰⁾ (see *In vitro* and animal studies).

Contra-indications, Warnings

Excessive doses may interfere with existing drug treatment for high or low blood pressure, and anti-coagulant therapy. In view of the tannin constituents, excessive use should be avoided.

Pregnancy and lactation Agrimony is reputed to affect the menstrual cycle.^(G22) In view of the lack of toxicity data, excessive use of agrimony should be avoided during pregnancy and lactation.

Pharmaceutical Comment

Relatively limited information is available on the chemistry of agrimony, although more is known about the tannin constituents of the related species *A. pilosa*. Human studies have indicated that agrimony may be useful in the treatment of certain cutaneous and gastrointestinal disorders, although further studies are needed to confirm these reports. The tannin constituents may justify the astringent activity attributed to the herb. In view of the lack of toxicity data, excessive use of agrimony should be avoided.

References

See also General References G2, G3, G9, G16, G22, G31, G36, G37, G40, G42 and G64.

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