

# Witch Hazel

## Species (Family)

*Hamamelis virginiana* L. (Hamamelidaceae)

## Synonym(s)

Hamamelis, Witchazel

## Part(s) Used

Bark, leaf

## Pharmacopoeial and Other Monographs

BHP 1996<sup>(G9)</sup>

BP 2001<sup>(G15)</sup>

Complete German Commission E<sup>(G3)</sup>

ESCOP 1997<sup>(G52)</sup>

Martindale 32nd edition<sup>(G43)</sup>

Mills and Bone<sup>(G50)</sup>

PDR for Herbal Medicines 2nd edition<sup>(G36)</sup>

Ph Eur 2002<sup>(G28)</sup>

USP24/NF19<sup>(G61)</sup>

## Legal Category (Licensed Products)

GSL<sup>(G37)</sup>

## Constituents<sup>(1, G2, G22, G41, G48, G50, G52, G64)</sup>

**Flavonoids (leaf)** Flavonols (e.g. kaempferol, quercetin) and their glycosides including astragalins, quercitrin, afzelin and myricitrin.

**Tannins, catechins** Pharmacopoeial standard, not less than 3%.<sup>(G15, G28)</sup> Hamamelitannin (hydrolysable), lesser amounts of condensed tannins (bark). (+)-catechin, (+)-gallocatechin, (–)-epicatechin gallate, (–)-epigallocatechingallate, proanthocyanidin oligomers of cyanidin and delphinidin type.

**Volatile oils** About 0.5%. Hexen-2-ol, hexenol,  $\alpha$ - and  $\beta$ -ionones, eugenol, safrole and sesquiterpenes.

**Other constituents** Fixed oil (about 0.6%), resin (hamamelin, hamamelitannin), wax, saponins, choline, free gallic acid and free hamamelose.

## Food Use

Witch hazel is listed by the Council of Europe as a natural source of food flavouring (category N3). This category indicates that there is insufficient information available for an adequate assessment of potential toxicity.<sup>(G16)</sup>

## Herbal Use<sup>(1, G2, G4, G6, G32, G43, G52, G54, G56, G64)</sup>

Witch hazel is stated to possess astringent, antihæmorrhagic and anti-inflammatory properties. Traditionally, it has been used for diarrhoea, mucous colitis, hæmorrhoids, hæmatemesis, hæmoptysis, and externally for external hæmorrhoids, bruises and localised inflamed swellings. The German Commission E approved use for minor skin injuries, local inflammation of skin and mucous membranes, hæmorrhoids and varicose veins.<sup>(G3)</sup>

## Dosage

**Dried leaves** 2 g or by infusion three times daily.<sup>(G6)</sup>

**Hamamelis Liquid Extract** (BPC 1973) 2–4 mL (1 : 1 in 45% alcohol) three times daily.<sup>(G6)</sup>

**Hamamelis Water** (BPC 1973) for local application, undiluted or 1 : 3 dilution for external use.<sup>(G3)</sup>

**Decoction** 5–10 g in 250 mL water for compresses.<sup>(G3)</sup>

## Pharmacological Actions

The pharmacological properties of witch hazel have been reviewed.<sup>(1, G50, G52)</sup>

## In vitro and animal studies

Witch hazel is known to possess astringent and hæmostatic properties, which have been attributed to the tannin constituents. Vasoconstriction was reduced in the hindquarters of rabbits when arteries were perfused with aqueous or ethanolic extracts of witch hazel leaf. A 70% ethanolic extract of leaf (1 : 5, 200 mg/kg, administered orally) significantly inhibited the chronic phase of carrageenan-induced rat paw oedema over a period of 19 days, compared with control ( $p < 0.05$ ).<sup>(2)</sup> An aqueous ethanolic extract of witch hazel bark yielded a fraction rich in polymeric

proanthocyanins after ultracentrifugation.<sup>(3)</sup> This fraction was significantly active against herpes simplex virus type 1 (HSV-1). It also showed radical scavenging properties, inhibited  $\beta$ -glucosidase and human leukocyte elastase activity, and was active in the croton oil ear oedema test in mice. In other studies, 3-O-galloyl-epicatechin-(4 $\beta$ ,8)-catechin, a catechin oligomer and hamamelitannin isolated from witch hazel bark had IC<sub>50</sub> values of 6.6, 8.8 and 1.0  $\mu$ mol/L, respectively, for inhibition of 5-lipoxygenase.<sup>(4)</sup> The oligomer was active in the microsomal lyso-PAF:acetyl-CoA-acetyltransferase inhibition assay, with an IC<sub>50</sub> value of 9.4  $\mu$ mol/L, whereas hamamelitannin was inactive.<sup>(4)</sup>

### Clinical studies

**Haemorrhoids** Uncontrolled studies have suggested that witch hazel bark distillate (5%) and a salve containing witch hazel bark may be effective in the treatment of haemorrhoids.<sup>(G50)</sup> A double-blind, controlled trial involving 90 patients with haemorrhoids compared the effects of witch hazel bark salve with those of other salves. Witch hazel was reported to be superior in relief of symptoms.

**Dermatology** In a study involving 30 volunteers who received topical applications of a hydroglycolic extract of witch hazel leaf, skin temperature was significantly reduced, compared with baseline values. This was interpreted as a possible vasoconstrictor effect of witch hazel.<sup>(G52)</sup> The effects of an after-sun lotion containing 10% hamamelis distillate were explored in 30 healthy volunteers using a modified UV-B erythema test for inflammation.<sup>(5)</sup> It was reported that erythema suppression ranged from 20% at 7 hours to 27% at 48 hours.

Witch hazel leaf extract incorporated into a cream formulation was applied twice daily for two weeks to seven children suffering from dermatitis atopica of the feet (chilblains) and to five children with eczema. Improvements in these conditions were reported.<sup>(G52)</sup>

In a two-week, randomised, double-blind trial, 72 patients with moderately severe eczema were treated with either a hamamelis distillate cream (5.35 g distillate with 0.64 g ketone/100 g), hydrocortisone cream 0.5%, or drug-free cream.<sup>(6)</sup> All three treatments significantly reduced itching, erythema and scaling after one week. Hydrocortisone cream was more effective than hamamelis cream.

Several clinical studies of witch hazel in the treatment of eczema have been reviewed.<sup>(G50)</sup> An uncontrolled study involving 37 patients treated with a witch hazel leaf cream twice daily for two weeks reported improvements in eczema and neurodermati-

tis. A double-blind, placebo-controlled trial of witch hazel salve (25% water distillate from leaf) involving 80 patients with toxic and degenerative eczema and 31 patients with endogenous eczema found that atopic dermatitis responded to the treatment, but that there was no significant effect on primary irritant contact dermatitis. An uncontrolled study involving 22 patients with atopic eczema who were treated with witch hazel (4 g leaf provided 25 mL distillate/100 g salve) applied to affected arms over a three-week period reported improvements symptoms, compared with baseline values.<sup>(G50)</sup>

### Side-effects, Toxicity

The volatile oil contains safrole, a known carcinogen (see *Sassafras*), but in amounts too small to cause concern. Stomach irritation may occur in susceptible patients after oral treatment. Four of 1032 patients tested reacted to an ointment containing 25% witch hazel extract, but two of these patients were sensitive to wool fat in the ointment base.<sup>(G50)</sup>

### Contra-indications, Warnings

None documented for witch hazel. In view of the tannin constituents, excessive ingestion of witch hazel is not recommended.

**Pregnancy and lactation** There are no known problems with the use of witch hazel during pregnancy, although excessive ingestion should be avoided in view of the tannin content.

### Pharmaceutical Comment

Witch hazel is characterised by its tannin constituents and astringent properties. The documented herbal uses are related to these astringent properties. There is some evidence to indicate that witch hazel is effective in the treatment of haemorrhoids and venous tone, but its use in the treatment of eczema and dermatitis is more controversial.

### References

See also General References G2, G3, G9, G12, G15, G16, G22, G28, G29, G31, G32, G36, G37, G41, G48, G43, G50, G52, G54, G56, G61 and G64.

- 1 Zeylstra H. *Hamamelis virginiana*. *Br J Phytother* 1998; 5: 23–28.
- 2 Duwiejua M *et al.* Anti-inflammatory activity of *Polygonum bistorta*, *Guaiacum officinale* and *Hamamelis virginiana* in rats. *J Pharm Pharmacol* 1994; 46: 286–290.

- 3 Erdelmeier CAJ *et al.* Antiviral and antiphlogistic activities of *Hamamelis virginiana*. *Planta Med* 1996; 62: 241–245.
- 4 Hartisch C *et al.* Dual inhibitory activities of tannins from *Hamamelis virginiana* and related polyphenols on 5-lipoxygenase and lyso-PAF: acetyl-CoA acetyltransferase. *Planta Med* 1997; 63: 106–110.
- 5 Hughes-Formella BJ *et al.* Anti-inflammatory effect of hamamelis lotion in a UVB erythema test. *Dermatology* 1998; 196: 316–322.
- 6 Korting HC *et al.* Comparative efficacy of hamamelis distillate and hydrocortisone cream in atopic eczema. *Eur J Clin Pharmacol* 1995; 48: 461–465.