Cassia

Species (Family)

Cinnamomum cassia Bl. (Lauraceae)

Synonym(s)

Cassia Bark, Cassia Lignea, Chinese Cinnamon, *Cinnamomum aromaticum* Nees, False Cinnamon

Part(s) Used

Bark

Pharmacopoeial and Other Monographs

BHP 1996[G9]
Martindale 32nd edition[G43]
PDR for Herbal Medicines 2nd edition[G36]

Legal Category (Licensed Products)

GSL (oil)[G37]

Constituents[G41,G58,G59,G62,G64]

Volatile oils 1–2%. Mainly composed of cinnamaldehyde (75–90%). Other major components include salicylaldehyde, methylsalicylaldehyde, and methyleugenol. Eugenol is reported to be absent. Cassia oil contains no monoterpenoids or sesquiterpenoids.[1]

Other constituents Calcium oxalate, coumarin, mucilage (higher content compared to cinnamon), resins, sugars and tannins (condensed). Complex diterpenoids have been isolated from cinnamomi cortex, for which *C. cassia* is used as a source.[1]

Food Use

Cassia bark and oil are extensively used as food flavourings. A temporary estimated acceptable daily intake of cinnamaldehyde is 700 µg/kg body weight. In the USA, cassia is listed as GRAS (Generally Recognised As Safe).[G41]

Herbal Use

Cassia is stated to possess carminative, antispasmodic, anti-emetic, antidiarrhoeal and antimicrobial properties. It has been used for flatulent dyspepsia, flatulent colic, diarrhoea, the common cold, and specifically for colic or dyspepsia with flatulent distension and nausea.[G7] Cassia bark is also documented to possess astringent properties.[G41,G64] Carminative and antiseptic properties are documented for the oil.[G41]

Dosage

Dried bark 0.5–1 g or by infusion three times daily.[G7]

Oil of cassia (BPC 1949) 0.05–0.2 mL three times daily.[G7]

Pharmacological Actions

In vitro and animal studies

Anti-ulcerogenic properties have been described for two propionic derivatives isolated from cassia.[2] An *in vivo* study using rats reported activity against a variety of ulcerogens including serotonin, phenylbutazone, ethanol, water immersion and stress. The compounds were thought to act by improving gastric blood flow rather than by inhibiting gastric secretion.

Many pharmacological investigations have been carried out on cinnamomi cortex, for which sources include *C. cassia* (cassia) and *Cinnamomum zeylanicum* (cinnamon). These studies have either looked at the volatile oil, in particular the major constituent cinnamaldehyde, or at parts excluding the oil.[1]

Activities documented for cinnamaldehyde include CNS stimulation (low dose), sedation (high dose), hypothermic and antipyretic actions;[1,G41] antibacterial and antifungal activity, acceleration of catecholamine (mainly adrenaline) release from the adrenal glands, weak papaverine-like action, increase in peripheral blood flow, hypotension, bradycardia and hyperglycaemia have also been reported.[1] However, these actions are of low potency and, in addition, much of the cinnamaldehyde content of cassia is thought to be lost by evaporation and auto-oxidation during decoction of the crude drug. The contribution of cinnamaldehyde to the overall therapeutic efficacy of cassia has therefore been doubted.[1]

Actions observed for essential oil-free aqueous extracts have been reported to be weak, and the only appreciable effects are prolongation of barbitu-

rate-induced sedation and a slight reduction of acetic acid-induced writhing.[1]

In vivo inhibitory activity against complement formation has been documented and attributed to the diterpenoid and condensed tannin constituents.[1] Anti-inflammatory activity exhibited by the Japanese plant *Cinnamomum sieboldii* Meisn (also used as a source for cassia bark), has been attributed to a series of condensed tannin constituents.[1] Antiplatelet aggregation and antithrombotic actions have also been reported. These actions, together with the documented anti-inflammatory activity, are thought to contribute to the suppression of thrombus formation in certain diseases.[1]

Antitumour activity has been described and the activity depends on the plant source used.[1]

Side-effects, Toxicity

Allergic reactions, mainly contact sensitivity, to cassia oil and bark have been reported.[G51,G58] Cinnamaldehyde in toothpastes and perfumes has also been reported to cause contact sensitivity.[G51] Cassia oil is stated to cause dermal and mucous membrane irritation.[G58] The irritant and sensitising properties of cassia oil have been attributed to cinnamaldehyde.[G58] The dermal LD_{50} value for cassia oil is stated as 320 mg/kg body weight.[G58]

Contra-indications, Warnings

Contact with cassia bark or oil may cause an allergic reaction. Cassia oil is stated to be one of the most hazardous oils and should not be used on the skin in concentrations of more than 0.2%.[G58]

Pregnancy and lactation There are no known problems with the use of cassia during pregnancy, provided that amounts taken do not exceed those generally used in foods.

Pharmaceutical Comment

Cassia is similar in composition to cinnamon and both are widely used as flavouring agents in foods, and in pharmaceutical and cosmetic preparations. Cassia oil is stated to be inferior in flavour to cinnamon oil. The reputed herbal uses of cassia have been attributed to the oil. Cassia contains an irritant and sensitising principle in the oil, cinnamaldehyde, and should not be used in amounts generally exceeding those used in foods. It has been recommended that the oil should never be applied topically.

References

See also General References G9, G11, G19, G20, G31, G36, G37, G41, G43, G51, G58, G59, G62 and G64.

1 Hikino H. Oriental medicinal plants. In: Wagner H *et al.*, eds. *Economic and Medicinal Plants*, vol 1. London: Academic Press, 1985: 69–70.

2 Tanaka S *et al.* Antiulcerogenic compounds isolated from Chinese Cinnamon. *Planta Med* 1989; 55: 245–248.