

Cinnamon

Species (Family)

- (i) *Cinnamomum zeylanicum* Bl. (Lauraceae)
- (ii) *Cinnamomum loureirii* Nees
- (iii) *Cinnamomum burmanii* (Nees) Bl.

Synonym(s)

- (i) Ceylon Cinnamon, *Cinnamomum verum* J.S. Presl., True Cinnamon
- (ii) *Cinnamomum obtusifolium* Nees var. *loureirii* Perr. & Eb., Saigon Cassia, Saigon Cinnamon
- (iii) Batavia Cassia, Batavia Cinnamon, Padang-Cassia, Panang Cinnamon

Part(s) Used

Inner bark

Pharmacopoeial and Other Monographs

BHP 1996^(G9)
BP 2001^(G15)
Complete German Commission E^(G3)
Martindale 32nd edition^(G43)
Ph Eur 2002^(G28)
WHO volume 1 1999^(G63)

Legal Category (Licensed Products)

GSL^(G37)

Constituents^(G2,G41,G48,G58,G59,G62,G64)

Tannins Condensed.

Volatile oils Up to 4%. Cinnamaldehyde (60–75%), benzaldehyde and cuminaldehyde; phenols (4–10%) including eugenol, methyl eugenol and safrole, pinene, phellandrene, cymene and caryophyllene (hydrocarbons), eugenol acetate, cinnamyl acetate and benzyl benzoate (esters), linalool (an alcohol). Of the various types of cinnamon bark the oil of *C. zeylanicum* is stated to contain the highest amount of eugenol. Cinnamon oil differs from the closely

related cassia oil in that the latter is reported to be devoid of eugenol, monoterpenoids and sesquiterpenoids (see Cassia).

Other constituents Calcium oxalate, cinnzeylanin, cinnzeylanol, coumarin, gum, mucilage, resins and sugars.

Other plant parts Cinnamon leaf oil contains much higher concentrations of eugenol, from 80 to 96% depending on the species. A cinnamon leaf oil of Chinese origin, *Cinnamomum japonicum* Sieb., contains a high concentration of safrole (60%) and only about 3% eugenol.

Food Use

Cinnamon is listed by the Council of Europe as a natural source of food flavouring (category N2). This category indicates that cinnamon can be added to foodstuffs in small quantities, with a possible limitation of an active principle (as yet unspecified) in the final product.^(G16) It is commonly used as a spice in cooking, although at levels much less than the stated therapeutic doses. The acceptable daily intake of cinnamaldehyde has been temporarily estimated as 700 µg/kg body weight.^(G45) In the USA, cinnamon is listed as GRAS (Generally Recognised As Safe).^(G41)

Herbal Use

Cinnamon is stated to possess antispasmodic, carminative, orexigenic, antidiarrhoeal, antimicrobial, refrigerant and anthelmintic properties. It has been used for anorexia, intestinal colic, infantile diarrhoea, common cold, influenza, and specifically for flatulent colic, and dyspepsia with nausea.^(G7) Cinnamon bark is also stated to be astringent, and cinnamon oil is reported to possess carminative and antiseptic properties.^(G2,G41,G64)

Dosage

Dried bark 0.5–1.0g as infusion three times daily.^(G7)

Liquid extract 0.5–1.0 mL (1:1 in 70% alcohol) three times daily.^(G7)

Tincture of Cinnamon (BPC 1949) 2–4 mL.

Pharmacological Actions

In vitro and animal studies

Cinnamon oil has antifungal, antiviral, bactericidal and larvicidal properties.^(G41) A carbon dioxide extract of cinnamon bark (0.1%) has been documented to suppress completely the growth of numerous microorganisms including *Escherichia coli*, *Staphylococcus aureus* and *Candida albicans*.^(G41) (See Cassia for details of the many pharmacological actions documented for cinnamaldehyde and cinnamomi cortex (cinnamon bark).)

Antiseptic and anaesthetic properties have been documented for eugenol⁽¹⁾ and two insecticidal compounds, cinnzeylanin and cinnzeylanol, have been isolated.^(G41) Tannins are known to possess astringent properties.

Weak tumour-promoting activity on the mouse skin and weak cytotoxic activity against HeLa cells has been documented for eugenol.^(G41)

Side-effects, Toxicity

None documented for cinnamon bark. Cinnamon oil contains cinnamaldehyde, an irritant and sensitising principle.^(G58) The dermal LD₅₀ of the oil is reported to be 690 mg/kg body weight (see Cassia). The accepted daily intake of eugenol is up to 2.5 mg/kg.^(G45)

Contra-indications, Warnings

Contact with cinnamon bark or oil may cause an allergic reaction.^(G51) Cinnamon oil is stated to be a dermal and mucous membrane irritant, and a dermal sensitiser.^(G58) It is a hazardous oil and should not be used on the skin.^(G58) The oil should not be taken internally.

Pregnancy and lactation There are no known problems with the use of cinnamon during pregnancy and lactation, provided that doses do not greatly exceed the amounts used in foods.

Pharmaceutical Comment

The reputed antimicrobial, antiseptic, anthelmintic, carminative and antispasmodic properties of cinnamon are probably attributable to the volatile oil. The astringent properties of tannins may account for the claimed antidiarrhoeal action. Cinnamon should not be used in amounts greatly exceeding those used in foods.

References

See also General References G2, G3, G9, G12, G15, G16, G19, G25, G29, G31, G36, G37, G41, G43, G48, G51, G58, G59, G62, G63 and G64.

- 1 Wagner H, Wolff P (eds). *New Natural Products and Plant Drugs with Pharmacological, Biological or Therapeutical Activity*. Berlin: Springer Verlag, 1977.