

Frangula

Species (Family)

Rhamnus frangula L. (Rhamnaceae)

Synonym(s)

Alder Buckthorn, *Frangula alnus* Mill.

Part(s) Used

Bark

Pharmacopoeial and Other Monographs

BHC 1992^(G6)

BHP 1996^(G9)

BP 2001^(G15)

Complete German Commission E (Buckthorn)^(G3)

ESCOP 1997^(G52)

Martindale 32nd edition^(G43)

PDR for Herbal Medicines 2nd edition^(G36)

Ph Eur 2002^(G28)

Legal Category (Licensed Products)

GSL^(G37)

Constituents^(G2,G6,G22,G41,G48,G59,G62,G64)

Anthraquinones 3–7%. Frangulosides as major components including frangulin A and B (emodin glycosides) and glucofrangulin A and B (emodin diglycosides); emodin derivatives including emodin dianthrone and its monorhamnoside, palmidin C (*see* Rhubarb) and its monorhamnoside, emodin glycoside; also glycosides of chrysophanol and physcione, and various free aglycones.

Other constituents Flavonoids and tannins.

Food Use

Frangula is listed by the Council of Europe as a natural source of food flavouring (category N4). While this category recognises the use of frangula as a flavouring agent, it indicates that there is insufficient information available to classify it further into categories N1, N2, or N3.^(G16)

Herbal Use

Frangula is stated to possess mild purgative properties and has been used traditionally for constipation.^(G2,G6,G7,G8,G64)

The Committee on Proprietary Medicinal Products (CPMP) has adopted a core SPC (Summary of Product Characteristics) for frangula. The core SPC includes indications for short-term use of frangula in cases of occasional constipation.⁽¹⁾

Dosage

Dried bark 0.5–2.5 g.^(G6)

Liquid extract 2–5 mL (1:1 in 25% alcohol) three times daily.^(G7)

Pharmacological Actions

The pharmacological activity of frangula can be attributed to the anthraquinone glycoside constituents. The laxative action of these compounds is well recognised (*see* Senna).

Side-effects, Toxicity^(G20)

See Senna for side-effects and toxicity associated with anthraquinones.

The CPMP core SPC for frangula includes the following information.⁽¹⁾ There are no studies on single dose toxicity, on repeated dose toxicity, on reproductive toxicity or on carcinogenicity. Different frangula extracts were shown to be genotoxic in several *in vitro* systems (bacterial mutation, chromosomal aberration and DNA-repair in mammalian cells). No increases in mutations were observed in a gene mutation assay with mammalian cells. For emodin, the main laxative principle of frangula, signs of a genotoxic potential were observed in several systems (bacteria and mammalian cells *in vitro*). Other anthraquinone constituents also gave positive results in limited experiments.

Contra-indications, Warnings

See Senna for contra-indications and warnings associated with anthraquinones.

The CPMP core SPC for frangula states the following contraindications and warnings.⁽¹⁾

Contra-indications Not to be used in cases of intestinal obstruction and stenosis, atony, inflammatory colon diseases (e.g. Crohn's disease, ulcerative colitis), appendicitis, abdominal pain of unknown origin, severe dehydration states with water and electrolyte depletion.

Precautions As with all laxatives, frangula bark should not be given when any undiagnosed acute or persistent abdominal symptoms are present. If laxatives are needed every day, the cause of the constipation should be investigated. Long-term use of laxatives should be avoided. Use for more than two weeks requires medical supervision. Chronic use may cause pigmentation of the colon (pseudomelanosis coli) which is harmless and reversible after drug discontinuation.

Abuse, with diarrhoea and consequent fluid and electrolyte losses, may cause: dependence, with possible need for increased dosages, disturbance of the water and electrolyte (mainly hypokalaemia) balance, an atonic colon with impaired function. Intake of anthranoid containing laxatives exceeding short-term use may result in an aggravation of constipation.

Hypokalaemia can result in cardiac and neuromuscular dysfunction, especially if cardiac glycosides, diuretics or corticosteroids are taken. Chronic use may result in albuminuria and haematuria.

In chronic constipation, stimulant laxatives are not an acceptable alternative to a changed diet.

Interaction with other medicaments and other forms of interaction. Hypokalaemia (resulting from long-term laxative abuse) potentiates the action of cardiac glycosides and interacts with antiarrhythmic drugs and drugs which induce reversion to sinus rhythm (e.g. quinidine). Concomitant use with other drugs inducing hypokalaemia (e.g. thiazide diuretics, adrenocorticosteroids and liquorice root) may enhance electrolyte imbalance.

Pregnancy and lactation The use of stimulant laxatives, particularly unstandardised preparations, is not

generally recommended during pregnancy (*see* Senna).

The CPMP core SPC for frangula includes the following information on use during pregnancy and lactation.

Pregnancy Frangula is not recommended during pregnancy.⁽¹⁾

There are no reports of undesirable or damaging effects during pregnancy and on the foetus when used at the recommended dosage schedule. However, experimental data concerning a genotoxic risk of several anthranoids, e.g. emodine and physcione, and frangula extract are not counterbalanced by sufficient studies to eliminate a possible risk.⁽¹⁾

Lactation Frangula is not recommended during breast feeding, as there are insufficient data on the excretion of its metabolites in breast milk. Excretion of the active principles of frangula in breast milk has not been investigated. However, small amounts of active metabolites (e.g. rhein) from other anthranoids are known to be excreted in breast milk. A laxative effect in breastfed babies has not been reported.⁽¹⁾

Pharmaceutical Comment

The chemistry of frangula is characterised by the anthraquinone glycoside constituents. The laxative action of these compounds is well recognised and supports the herbal use of frangula as a laxative. The use of non-standardised anthraquinone-containing preparations should be avoided, since their pharmacological effect will be variable and unpredictable. In particular, the use of products containing combinations of anthraquinone laxatives should be avoided.

References

See also General References G2, G3, G6, G9, G11, G15, G16, G20, G22, G28, G29, G36, G37, G41, G43, G48, G52, G62 and G64.

- 1 European Commission, CPMP Guidelines on Information on Medicinal Products: Core Summary of Product Characteristics for Frangulae Cortex, February 1994.