# Jamaica Dogwood

## Species (Family)

*Piscidia erythrina* L. (Leguminosae)

## Synonym(s)

Fish Poison Bark, *Ichthymethia piscipula* (L.) A.S. Hitchc. ex Sarg., *Piscidia communis* Harms, *Piscidia piscipula* (L.) Sarg., West Indian Dogwood

## Part(s) Used

Root bark

## Pharmacopoeial and Other Monographs

BHC 1992[G6]
BHP 1996[G9]
PDR for Herbal Medicines 2nd edition[G36]

## Legal Category (Licensed Products)

GSL[G37]

## Constituents[G6,G22,G40,G41,G64]

*Acids* Piscidic acid (*p*-hydroxybenzyltartaric) and its mono and diethyl esters,[1] fukiic acid and the 3'-O-methyl derivative; malic acid, succinic acid, and tartaric acid.

*Isoflavonoids* Ichthynone, jamaicin, piscerythrone, piscidone and others. Milletone, isomillettone, dehydromillettone, rotenone and sumatrol (rotenoids), and lisetin.[2–5]

*Glycosides* Piscidin, reported to be a mixture of two compounds, saponin glycoside (unidentified).[6]

*Other constituents* Alkaloid (unidentified, reported to be from the stem), resin, volatile oil 0.01%, β-sitosterol, tannin (unspecified).[6]

## Food Use

Jamaica dogwood is stated by the Council of Europe to to be toxicologically unacceptable for use as a natural food flavouring.[G16]

## Herbal Use

Jamaica dogwood is stated to possess sedative and anodyne properties. Traditionally, it has been used for neuralgia, migraine, insomnia, dysmenorrhoea, and specifically for insomnia due to neuralgia or nervous tension.[G6,G7,G8,G64]

## Dosage

*Dried root bark* 1–2 g or by decoction three times daily.[G6,G7]

*Liquid extract* 1–2 mL (1 : 1 in 30% alcohol) three times daily.[G6,G7]

*Liquid Extract of Piscidia* (BPC 1934) 2–8 mL.

## Pharmacological Actions

### *In vitro* and animal studies

Results of early studies reported Jamaica dogwood to possess weak cannabinoid and sedative activities in the mouse, guinea-pig and cat.[6–8] In addition, *in vitro* antispasmodic activity on rabbit intestine, and guinea-pig and rat uterine muscle[6,9,10] were noted and *in vivo* utero-activity in the cat and monkey were documented.[6,7,10,11] In some instances, *in vitro* antispasmodic activity was found to be comparable to, or greater than, that observed for papaverine.

More recent work has supported these findings and reported that the antispasmodic activity of Jamaica dogwood on uterine smooth muscle is attributable to two isoflavone constituents, one being equipotent to papaverine.[11]

Jamaica dogwood extracts have also been documented to exhibit antitussive, antipyretic, and anti-inflammatory activities in various experimental animals.[7]

Rotenone is an insecticide that has been used in agriculture for the control of lice, fleas, and as a larvicide.[G45] Jamaica dogwood has been used extensively throughout Central and South America as a fish poison;[6] the wood contains two piscicidal principles, rotenone and ichthynone. Rotenone is relatively harmless to warm-blooded animals.[12]

Rotenone has reported exhibited anticancer activity towards lymphocytic leukaemia and human

epidermoid carcinoma of the nasopharynx.[G22] It is also documented to be carcinogenic.[G22]

## Side-effects, Toxicity

Symptoms of overdose are stated to include numbness, tremors, salivation and sweating.[G22] Jamaica dogwood has been found to be toxic when administered parenterally to rats and rabbits, but non-toxic when given orally, with doses exceeding 90 g dried extract/kg tolerated.[6] An $LD_{50}$ (mice, intravenous injection) of an unidentified saponin constituent has been reported as 75 µg/kg body weight.[9] Oral doses of up to 1.5 mg/kg were stated to have no effect.[6]

Jamaica dogwood is stated to be irritant and toxic to humans.[G51]

## Contra-indications, Warnings

It is recommended that Jamaica dogwood should be used with great care, and only by trained practitioners.[G49] Jamaica dogwood may potentiate sedative effects of existing therapy.

*Pregnancy and lactation* Jamaica dogwood has been reported to exhibit a potent depressant action on the uterus both *in vitro* and *in vivo*. In view of this and the general warnings regarding the use of Jamaica dogwood, it should not be used during pregnancy and lactation.

## Pharmaceutical Comment

Jamaica dogwood is characterised by various isoflavone constituents, to which the antispasmodic properties described for the wood have been attributed. In addition, sedative and narcotic activities have been documented that justify the reputed herbal uses. Although Jamaica dogwood is reported to be of low toxicity in various animal species, it is also documented as toxic to humans[G51] and is recommended to be used with great care.[G49] In view of this, excessive use of Jamaica dogwood should be avoided.

## References

*See also* General References G6, G9, G16, G22, G31, G36, G37, G40, G41, G45, G49, G51 and G64.


1 Bridge W *et al.* Constituents of 'Cortex Piscidiae Erythrinae'. Part I. The structure of piscidic acid. *J Chem Soc* 1948; 257.

2 Falshaw CP *et al.* The Extractives of Piscidia Erythrina L. III. The constitutions of lisetin, piscidone and piscerythrone. *Tetrahedron* 1966; Suppl 7: 333–348.

3 Redaelli C, Santaniello E. Major isoflavonoids of the Jamaican dogwood *Piscidia erythrina*. *Phytochemistry* 1984; 23: 2976–2977.

4 Delle Monache F *et al.* Two isoflavones from *Piscidia erythrina*. *Phytochemistry* 1984; 23: 2945–2947.

5 Harborne JB, Mabry TJ, eds. *The Flavonoids*. New York: Chapman and Hall, 1982: 606.

6 Costello CH, Butler CL. An investigation of *Piscidia erythrina* (Jamaica Dogwood). *J Am Pharm Assoc* 1948; 37: 89–96.

7 Aurousseau M *et al.* Certain pharmacodynamic properties of *Piscidia erythrina*. *Ann Pharm Fr* 1965; 23: 251–257.

8 Della-Loggia R *et al.* Evaluation of the activity on the mouse CNS of several plant extracts and a combination of them. *Riv-Neurol* 1981; 51: 297–310.

9 Pilcher JD *et al.* The action of the so-called female remedies on the excised uterus of the guinea-pig. *Arch Intern Med* 1916; 18: 557–583.

10 Pilcher JD, Mauer RT. The action of female remedies on the intact uteri of animals. *Surg Gynecol Obstet* 1918; 97–99.

11 Della Loggia R *et al.* Isoflavones as spasmolytic principles of *Piscidia erythrina*. *Prog Clin Biol Res* 1988; 280: 365–368.

12 Claus E *et al.*, eds. Pesticides. In: *Pharmacognosy*. Philadelphia: Lea and Febiger, 1970; 486–487.