Yucca

Species (Family)

Various *Yucca* species (Liliaceae/Agavaceae) including
(i) *Yucca schidigera* Roezl ex Ortgies
(ii) *Yucca brevifolia* Engelm.
(iii) *Yucca glauca*

Synonym(s)

(i) Mohave Yucca, *Yucca mohavensis* Sarg.
(ii) Joshua Tree, *Yucca arborescens* Trel.

Part(s) Used

Whole plant

Pharmacopoeial and Other Monographs

PDR for Herbal Medicines 2nd edition[G36]

Legal Category (Licensed Products)

Yucca is not listed in the GSL.

Constituents

Terpenoids Various saponins have been isolated from different *Yucca* species, including tigogenin and chlerogenin,[1] yuccagenin and kammogenin,[2] sarsaspogenin, markogenin, higogenin, neo-tigogenin, neo-gitogenin, hecogenin, gloriogenin, and diosgenin (trace)[3] and smilagenin.

Food Use

Yucca filamentosa L. (bear grass) 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.[G16] The yucca plant has been used traditionally as a major foodstuff by Indian tribes. In the USA, both *Y. schidigera* and *Y. brevifolia* are approved for food use.[G41]

Herbal Use

Yucca has been used for the treatment of arthritis, diabetes and stomach disorders. Concentrated plant juice has been used topically to soothe painful joints.

Dosage

None documented.

Pharmacological Actions

In vitro and animal studies

In the rat, anti-inflammatory activity against carrageenan-induced inflammation has been documented for a saponin-containing leaf extract from *Yucca schotti*.[2] Yucca saponin extract, from *Y. schidigera*, is reported to exhibit approximately half the haemolytic activity of commercial soap bark saponin.

Antitumour activity against B16 melanoma has been documented for a polysaccharide-containing extract of *Y. glauca*.[4] The extract was found to be inactive towards L1210 or P388 leukaemias.

Clinical studies

A saponin-containing yucca extract has been reported to reduce symptoms of swelling, pain and stiffness in approximately 75 of 150 arthritic patients given the extract in a double-blind study.[5] The onset of a positive response was found to vary from days to weeks or months. A saponin-containing yucca extract has also been documented to reduce blood pressure, abnormal triglyceride, and high cholesterol concentrations in a double-blind study involving 212 arthritic and hypertensive patients.[6] Optimum results were obtained in conjunction with diet and exercise. Yucca extracts have also been reported to provide relief from headaches and to improve circulation and gastrointestinal function.[5,6]

Side-effects, Toxicity

Limited toxicity data are available for yucca. A 12-week study in rats concluded that yucca was non-toxic. A saponin-containing yucca extract was given to more than 700 arthritic patients with no signs

of toxicity documented. The yucca saponins are regarded to be a safe food supplement since they are not thought to be absorbed from the gastrointestinal tract, thereby reducing the dangers of systemic haemolytic activity.[5]

Contra-indications, Warnings

Pregnancy and lactation There are no known problems with the use of yucca during pregnancy and lactation. However, it is advisable not to exceed amounts normally ingested as a food.

Pharmaceutical Comment

Limited phytochemical information is available for yucca, steroidal saponins being the only documented constituents. Human studies have reported a yucca saponin extract to have a beneficial effect on certain symptoms of arthritis such as pain and stiffness, and to reduce blood pressure and serum triglyceride and cholesterol concentrations. The traditional use of yucca as a foodstuff would indicate it to be of low toxicity.

References

See also General References G16, G32, G36 and G41.

1 Dewidar AM, El-Munajjed D. The steroid sapogenin constituents of *Agave americana*, *A. variegata* and *Yucca gloriosa*. *Planta Med* 1970; 19: 87–91.

2 Backer RC *et al.* A phytochemical investigation of *Yucca schotti* (Liliaceae). *J Pharm Sci* 1972; 61: 1665–1666.

3 Stohs SJ *et al.* Steroidal sapogenins of *Yucca glauca* seeds. *Lloydia* 1973; 36: 443.

4 Ali MS *et al.* Isolation of antitumor polysaccharide fractions from *Yucca glauca* Nutt. (Liliaceae). *Growth* 1978; 42: 213–223.

5 Bingham R *et al.* Yucca plant saponin in the management of arthritis. *J Appl Nutr* 1975; 27: 45–51.

6 Bingham R *et al.* Yucca plant saponin in the treatment of hypertension and hypercholesterolemia. *J Appl Nutr* 1978; 30: 127–136.