

# False Unicorn

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## Species (Family)

*Chamaelirium luteum* (L.) A. Gray (Liliaceae)

## Synonym(s)

Blazing Star, *Chamaelirium carolinum* Wild., Helonias, *Helonias dioica* Pursh., *Helonias lutea* Ker-Gawl., Starwort, *Veratrum luteum* L.

## Part(s) Used

Rhizome, root

## Pharmacopoeial and Other Monographs

BHP 1996<sup>(G9)</sup>

Martindale 32nd edition<sup>(G43)</sup>

PDR for Herbal Medicines 2nd edition<sup>(G36)</sup>

## Legal Category (Licensed Products)

GSL<sup>(G37)</sup>

## Constituents<sup>(G40,G48,G64)</sup>

Limited chemical information is available on false unicorn. It is stated to contain a steroidal saponin glycoside, chamaelirin, and another glycoside helonin.

## Food Use

False unicorn is not used in foods.

## Herbal Use

False unicorn is stated to possess an action on the uterus. Traditionally it has been used for ovarian dysmenorrhoea, leucorrhoea and specifically for amenorrhoea. It is reported to be useful for vomiting of pregnancy and threatened miscarriage.<sup>(G7,G8,G64)</sup>

## Dosage

*Dried rhizome/root* 1–2 g or by infusion three times daily.<sup>(G7)</sup>

*Liquid extract* 1–2 mL (1:1 in 45% alcohol) three times daily.<sup>(G7)</sup>

*Tincture* 2–5 mL (1:5 in 45% alcohol) three times daily.<sup>(G7)</sup>

## Pharmacological Actions

None documented.

## Side-effects, Toxicity

No reported side-effects or documented toxicity studies were located. It is stated that large doses of false unicorn may cause nausea and vomiting.<sup>(G7)</sup>

## Contra-indications, Warnings

None documented.

*Pregnancy and lactation* The safety of false unicorn has not been established. In view of the lack of phytochemical, pharmacological and toxicity data, and its reputed action as a uterine tonic, the use of false unicorn during pregnancy and lactation should be avoided.

## Pharmaceutical Comment

The chemistry of false unicorn is poorly documented and no scientific evidence was located to justify the herbal uses. In view of this and the lack of toxicity data, the use of false unicorn should be avoided.

## References

See General References G9, G31, G36, G37, G40, G43, G48 and G64.

# Fenugreek

## Species (Family)

*Trigonella foenum-graecum* L. (Leguminosae)

## Synonym(s)

Bockshornsame

## Part(s) Used

Seed

## Pharmacopoeial and Other Monographs

BHP 1996<sup>(G9)</sup>

BP 2001<sup>(G15)</sup>

Complete German Commission E<sup>(G3)</sup>

Martindale 32nd edition<sup>(G43)</sup>

PDR for Herbal Medicines 2nd edition<sup>(G36)</sup>

Ph Eur 2002<sup>(G28)</sup>

## Legal Category (Licensed Products)

GSL<sup>(G37)</sup>

## Constituents<sup>(G2,G41,G48,G64)</sup>

**Alkaloids** Pyridine-type. Gentianine, trigonelline (up to 0.13%), choline (0.05%).

**Proteins and amino acids** Protein (23–25%) containing high quantities of lysine and tryptophan. Free amino acids include 4-hydroxyisoleucine (0.09%), histidine, lysine and arginine.

**Flavonoids** Flavone (apigenin, luteolin) glycosides including orientin and vitexin, quercetin (flavonol).

**Saponins** 0.6–1.7%. Glycosides yielding steroidal sapogenins diosgenin and yamogenin (major), with tigogenin, neotigogenin, gitogenin, neogitogenin, smilagenin, sarsasapogenin, yuccagenin;<sup>(1)</sup> fenugreekine, a sapogenin-peptide ester involving diosgenin and yamogenin;<sup>(2)</sup> trigofenosides A–G (furostanol glycosides).<sup>(3–6)</sup>

**Other constituents** Coumarin,<sup>(7)</sup> lipids (5–8%),<sup>(8)</sup> mucilaginous fibre (50%),<sup>(8)</sup> vitamins (including nicotinic acid) and minerals.

## Food Use

Fenugreek is listed by the Council of Europe as a natural source of food flavouring (category N2). This category indicates that fenugreek can be added to foodstuffs in small quantities, with a possible limitation of an active principle (as yet unspecified) in the final product.<sup>(G16)</sup> In the USA, fenugreek extracts are permitted in foods at concentrations usually below 0.05%. In addition, fenugreek is listed as GRAS (Generally Recognised As Safe) in the USA.

## Herbal Use

Fenugreek is stated to possess mucilaginous demulcent, laxative, nutritive, expectorant and orexigenic properties, and has been used topically as an emollient and vulnerary. Traditionally, it has been used in the treatment of anorexia, dyspepsia, gastritis and convalescence, and topically for furunculosis, myalgia, lymphadenitis, gout, wounds and leg ulcers.<sup>(G2,G7,G22,G64)</sup>

## Dosage

**Seed** 1–6 g or equivalent three times daily.<sup>(G49)</sup>

## Pharmacological Actions

### *In vitro* and animal studies

Hypocholesterolaemic activity has been reported for fenugreek in rats<sup>(9,G41)</sup> and alloxan-diabetic dogs.<sup>(10)</sup> Activity has been attributed to the fibre and saponin fractions, and not to lipid or amino acid fractions.<sup>(9,10)</sup> Studies have reported a reduction in cholesterol but not triglyceride concentrations,<sup>(9)</sup> or in both cholesterol and triglyceride concentrations, but without significant alterations in high-density lipo-

protein (HDL) and low-density lipoprotein (LDL) concentrations.<sup>(10)</sup>

Hypoglycaemic activity has been observed in rabbits, rats and dogs, and attributed to the defatted seed fraction (DSF),<sup>(8)</sup> trigonelline, nicotinic acid and coumarin.<sup>(7,11)</sup> Oral administration of DSF reduced hyperglycaemia in four alloxan-diabetic dogs, and reduced the response to an oral glucose tolerance test in eight normal dogs, whereas the lipid fraction had no effect on serum glucose and insulin concentrations.<sup>(8)</sup> The high fibre content (50%) of DSF was thought to contribute to its antidiabetic effect although the initial rate of glucose absorption was not affected.<sup>(8)</sup> Nicotinic acid and coumarin were reported to be the major hypoglycaemic components of fenugreek seeds, following administration to normal and alloxan-diabetic rats.<sup>(7)</sup> The hypoglycaemic action exhibited by coumarin was still significant 24 hours post administration.<sup>(7)</sup> In addition, a slight antidiuretic action was noted for coumarin.<sup>(7)</sup> Trigonelline inhibited cortisone-induced hyperglycaemia in rabbits if administered (250 mg/kg) concomitantly or two hours before, but not two hours after, cortisone.<sup>(11)</sup> In addition, trigonelline exhibited significant hypoglycaemic activity in alloxan-diabetic rats (50 mg/kg), lasting 24 hours.<sup>(11)</sup>

A stimulant action on the isolated uterus (guinea-pig), especially during late pregnancy, has been noted for both aqueous and alcoholic extracts.<sup>(G41)</sup> An aqueous extract is stated to increase the number of heart beats in the isolated mammalian heart.<sup>(G41)</sup>

*In vitro* antiviral activity against vaccinia virus has been reported for fenugreek, which also possesses cardiotonic, hypoglycaemic, diuretic, antiphlogistic and antihypertensive properties.<sup>(2)</sup>

### Clinical studies

A transient hypoglycaemic effect was observed in 5 of 10 diabetic patients who received 500 mg oral trigonelline whilst fasting.<sup>(11)</sup> Increasing the dose did not increase this effect, and 500 mg ingested three times a day for five days did not alter the diurnal blood glucose concentration.<sup>(11)</sup> Hypoglycaemic activity in healthy individuals has been reported for whole seed extracts, with slightly lesser activity exhibited by gum isolate, extracted seeds and cooked seeds.<sup>(12)</sup> The addition of fenugreek to an oral glucose tolerance test reduced serum glucose and insulin concentrations. Chronic ingestion (21 days) of extracted seeds (25 g seeds daily incorporated into two meals) by non-insulin-dependent diabetics improved plasma glucose and insulin responses (no control group), and reduced 24-hour urinary glucose concentrations.<sup>(12)</sup> Furthermore, in two diabetic insulin-dependent subjects, daily administration of 25 g fenugreek seed

powder reduced fasting plasma-glucose profile, glycosuria and daily insulin requirements (56–20 units) after eight weeks. A significant reduction in serum cholesterol concentrations in diabetic patients was also noted.<sup>(12)</sup>

### Side-effects, Toxicity

No reported side-effects were located for fenugreek. Acute toxicity values (LD<sub>50</sub>) documented for fenugreek alcoholic seed extract are 5 g/kg (rat, oral) and 2 g/kg (rabbit, dermal).<sup>(13)</sup> The alcoholic seed extract is reported to be non-irritating and non-sensitising to human skin and non-phototoxic (mice, pigs).<sup>(13)</sup> Coumarin is a toxic seed component.<sup>(7)</sup> Acute LD<sub>50</sub> (rat, oral) values per kilogram documented for various seed constituents are 5 g (trigonelline), 8.8 g (nicotinic acid), 7.4 g (nicotinamide) and 0.72 g (coumarin).<sup>(7)</sup>

### Contra-indications, Warnings

Hypoglycaemic activity has been reported for fenugreek, which may therefore interfere with existing hypoglycaemic therapy. Caution is advisable in patients receiving monoamine oxidase inhibitor (MAOI), hormonal or anticoagulant therapies in view of amine, steroidal saponin and coumarin constituents, respectively, although their clinical significance is unclear. Cardioactivity has been documented *in vitro*. The absorption of drugs taken concomitantly with fenugreek may be affected (high mucilaginous fibre content).

*Pregnancy and lactation* Fenugreek is reputed to be oxytocic<sup>(G22)</sup> and *in vitro* uterine stimulant activity has been documented. In view of this, and the documented pharmacologically active components, the use of fenugreek during pregnancy and lactation in doses greatly exceeding those normally encountered in foods is not advisable.

### Pharmaceutical Comment

Fenugreek seeds contain a high proportion of mucilaginous fibre, together with various other pharmacologically active compounds including steroidal and amine components. The majority of the traditional uses of fenugreek are probably attributable to the mucilage content. In addition, hypocholesterolaemic and hypoglycaemic actions have been documented for fenugreek in both laboratory animals and humans. The mechanism by which fenugreek exerts these actions is unclear. Proposed theories include a reduction in carbohydrate absorption by the mucilaginous fibre,<sup>(12)</sup> and an effect on cholesterol metabo-

lism, cholesterol absorption and bile acid excretion by the saponin components.<sup>(8)</sup> Toxicity studies indicate fenugreek seeds to be relatively non-toxic, although the presence of pharmacologically active constituents would suggest that excessive ingestion is inadvisable.

## References

See also General References G2, G3, G9, G11, G15, G16, G22, G28, G31, G32, G36, G37, G40, G41, G43, G48, G49 and G64.

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- 2 Ghosal S *et al.* Fenugreekine, a new steroidal sapogenin-peptide ester of *Trigonella foenum-graecum*. *Phytochemistry* 1974; 13: 2247-2251.
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- 4 Varshney IP *et al.* Saponins from *Trigonella foenum-graecum* leaves. *J Nat Prod* 1984; 47: 44-46.
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- 10 Sharma RD. An evaluation of hypocholesterolemic factor of fenugreek seeds (*T. foenum graecum*) in rats. *Nutr Rep Int* 1986; 33: 669-677.
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