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Fenugreek

Updated: January 29, 2018.

OVERVIEW

Introduction

Fenugreek is an herb prepared from the dried seeds of Trigonella foenum-graecum which is used for its antioxidant and glucose- and cholesterol-lowering effects in the treatment of fever, vomiting, poor appetite, diabetes and hypercholesterolemia. Fenugreek has not been implicated in causing liver injury.

Background

Fenugreek is an herb extract prepared from the dried seeds of Trigonella foenum-graecum (sicklefruit fenugreek), a plant belonging to the pea family (Fabaceae). It is native to India and northern Africa and is one of the oldest medicinal plants is continuous use. In Chinese medicine, fenugreek seeds were used as a tonic; in Indian medicine, as a stimulant to lactation; and, in many folk medicines as an aid to digestion and treatment of baldness. Investigation of its activity in animal models suggested that fenugreek extracts have antioxidant, antihyperlipidemic and hypoglycemic activities. Constituents of fenugreek extracts include dietary fibers, mucilages, steroid saponins, flavonoids, trigonelline, and volatile oils. The lipid- and glucose-lowering effects of fenugreek have been attributed to saponins. The benefits of fenugreek therapy in hypercholesterolemia and diabetes in humans have not been proven in rigorously designed prospective clinical trials. Nevertheless, fenugreek is widely used, often in combination with conventional therapies. The usual doses used to aid in the management of diabetes and hypercholesterolemia are variable, ranging from 2 to 100 grams daily taken in 2 or 3 divided doses either as capsules or as powder to prepare teas. Fenugreek preparations contain high levels of fiber, which may represent 50% of its constituents. Fenugreek is also used topically and in foods as a flavoring agent. Side effects of oral fenugreek are minor and include gastrointestinal upset, nausea, diarrhea, bloating, flatulence, and allergic reactions with facial edema, wheezing, dizziness and shock.

Hepatotoxicity

Despite being widely used, fenugreek has not been implicated in cases of clinically apparent liver injury and, in prospective studies, has had no effect on serum enzyme levels. In vitro studies have demonstrated hepatoprotective activity of fenugreek extracts in several animal models. Because of the high fiber content, estrogenic and coumadin-like effects of fenugreek, it has a potential to cause herb-drug interactions particularly if taken in high doses with antiplatelet drugs and warfarin.

Likelihood score: E (unlikely cause of clinically apparent liver injury).

Other Names: Alholva, Bird's Foot, Bockshornklee, Fenogreco, Greek Clover, Greek Hay, Hu Lu Ba, Methi, Trigonella, Woo Lu Bar.

Drug Class: Herbal and Dietary Supplements

PRODUCT INFORMATION

REPRESENTATIVE TRADE NAMES

Fenugreek – Generic

DRUG CLASS

Herbal and Dietary Supplements

SUMMARY INFORMATION

Fact Sheet at National Center for Complementary and Integrative Health, NIH

CHEMICAL FORMULA AND STRUCTURE

DRUG	CAS REGISTRY NUMBER	MOLECULAR FORMULA	STRUCTURE
Fenugreek	0977155295	Herbal mixture	Not Applicable

ANNOTATED BIBLIOGRAPHY

References updated: 29 January 2018

Zimmerman HJ. Unconventional drugs. Miscellaneous drugs and diagnostic chemicals. In, Zimmerman, HJ. Hepatotoxicity: the adverse effects of drugs and other chemicals on the liver. 2nd ed. Philadelphia: Lippincott,1999: pp. 731-4.

(Expert review of hepatotoxicity published in 1999; fenugreek is not discussed).

Seeff L, Stickel F, Navarro VJ. Hepatotoxicity of herbals and dietary supplements. In, Kaplowitz N, DeLeve LD, eds. Drug-induced liver disease. 3rd ed. Amsterdam: Elsevier, 2013, pp. 631-58. *(Review of hepatotoxicity of herbal and dietary supplements [HDS]*

; fenugreek is not discussed).

Fenugreek. In, PDR for Herbal Medicines. 4th ed. Montvale, New Jersey: Thomson Healthcare Inc. 2007: pp. 319-20.

(Compilation of short monographs on herbal medications and dietary supplements).

Sushma N, Devasena T. Aqueous extract of Trigonella foenum graecum(fenugreek) prevents cypermethrin-induced hepatotoxicity and nephrotoxicity. Hum Exp Toxicol 2010; 29: 311-9. PubMed PMID: 20147568.

(Fenugreek decreased the hepatic and renal toxicity of the pesticide cypermethrin in rats).

Thirunavukkarasu V, Anuradha CV, Viswanathan P. Protective effect of fenugreek (Trigonella foenum graecum) seeds in experimental ethanol toxicity. Phytother Res 2003; 17: 737-43. PubMed PMID: 12916070.

(Fenugreek extracts decreased enzyme elevations and markers of lipid peroxidation in a rat model of alcohol hepatotoxicity).

Ulbricht C, Basch E, Burke D, Cheung L, Ernst E, Giese N, Foppa I, et al. Fenugreek (Trigonella foenum-graecum L. Leguminosae): an evidence-based systematic review by the natural standard research collaboration. J Herb Pharmacother 2007; 7: 143-77. PubMed PMID: 18928139.

(Extensive review of laboratory and clinical data of medicinal effects of fenugreek; "Literature review reveals no reports of clinically significant harmful adverse effects," no mention of effect on ALT levels or hepatotoxicity).

Thompson Coon JS, Ernst E. Herbs for serum cholesterol reduction: a systematic view. J Fam Pract 2003; 52: 468-78. PubMed PMID: 12791229.

(Systematic review of literature found 5 randomized controlled trials of fenugreek in lowering serum cholesterol; cholesterol levels lowered by 15-33%; side effects were mild and largely gastrointestinal).

Basch E, Ulbricht C, Kuo G, Szapary P, Smith M. Therapeutic applications of fenugreek. Altern Med Rev 2003; 8: 20-7. PubMed PMID: 12611558.

(Review of the safety and efficacy of fenugreek, most studies showing some effect in lowering blood glucose in open labeled studies but without adequate controls; no reports of clinically significant adverse effects).

Hasani-Ranjbar S, Nayebi N, Moradi L, Mehri A, Larijani B, Abdollahi M. The efficacy and safety of herbal medicines used in the treatment of hyperlipidemia; a systematic review. Curr Pharm Des 2010;16: 2935-47. PubMed PMID: 20858178.

(Review of the safety and efficacy of herbal medications used to treat hyperlipidemia including fenugeek, mentions that it has not been associated with significant adverse events).

Nathan J, Panjwani S, Mohan V, Joshi V, Thakurdesai PA. Efficacy and safety of standardized extract of Trigonella foenum-graecum L seeds as an adjuvant to L-Dopa in the management of patients with Parkinson's disease. Phytother Res 2014; 28: 172-8. PubMed PMID: 23512705.

(Controlled trial of fenugeek vs placebo in 50 patients with Parkinson disease found no change in serum ALT or AST levels during 6 months of therapy).

Navarro VJ, Barnhart H, Bonkovsky HL, Davern T, Fontana RJ, Grant L, Reddy KR, et al. Liver injury from herbals and dietary supplements in the U.S. Drug-Induced Liver Injury Network. Hepatology 2014; 60: 1399-408. PubMed PMID: 25043597.

(Among 839 cases of liver injury from drugs collected in the US between 2004 and 2013, 130 were due to various HDS products, none of which were attributed to fenugreek).

Verma N, Usman K, Patel N, Jain A, Dhakre S, Swaroop A, Bagchi M, et al. A multicenter clinical study to determine the efficacy of a novel fenugreek seed (Trigonella foenum-graecum) extract (Fenfuro™) in patients with type 2 diabetes. Food Nutr Res 2016; 60: 32382. PubMed PMID: 27733237.

(Among 150 patients with type 2 diabetes treated with fenugreek seed extract or placebo for 90 days, fasting blood glucose levels fell by 30% vs 17% in controls, but HgbA1c and serum aminotransferase levels were unchanged in both groups).

Steels E, Steele ML, Harold M, Coulson S. Efficacy of a proprietary Trigonella foenum-graecum L. de-husked seed extract in reducing menopausal symptoms in otherwise healthy women: a double-blind, randomized, placebo-controlled study. Phytother Res 2017; 31: 1316-22. PubMed PMID: 28707431.

(Among 115 healthy, adult women with menopausal symptoms who were treated with a fenugreek seed extract or placebo for 12 weeks, several symptoms improved while "liver function tests remained within normal reference range").