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A pharmacognostical insight into the traditional and modern applications of Kasuri Methi: A detailed overview

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Abstract

Kasuri methi is the ethnomedicinal plant (*Trigonella foenum-graecum* L) which is a member of the Fabaceae family. Kasuri methi is also known as sickle fruited fenugreek. In ancient time fenugreek seed and leaves commonly used in Egypt for the treatment of burn. It is currently widely cultivated in central Africa, North America and parts of Australia, with India. Many extracts of each seed or leaf and its active components have been studied for their pharmacological effects and have been reported to have hypocholestraemic, antidiabetic, anti-inflammatory, antiulcer, analgesic, antipyretic, CNS-stimulant, antioxidant, wound healing and immune modulatory activity as well as gastro-protective and chemo-preventive activities. This overview consolidates the botanical description, cultivation, phytochemistry, pharmacological activities and medicinal uses of kasuri methi.

Keywords: Kasuri methi, hypocholestraemic, anti-inflammatory, fenugreek

Introduction

Kasuri methi is the ethnomedicinal plant (*Trigonella foenum-graecum* L) which is a member of the Fabaceae family. Kasuri methi is also known as sickle fruited fenugreek. They were investigated for their potential for use as nutraceuticals [1]. The green leaves and seeds of fenugreek are widely used in food and medicinal applications dating back to ancient times. The leaves and seeds of these both species are used in medicinal and culinary purpose. In ancient time fenugreek seed and leaves commonly used in Egypt for the treatment of burn. It was taken with honey for the treatment of "Dyspepsia" and much other diseases like "Diabetes" and "rickets" [2]. It is currently widely cultivated in central Africa, North America and parts of Australia, with India. However, the seeds are sour in taste due to the presence of bitter saponins, which limit their acceptability in foods. It has been possible to decrease the bitter taste of fenugreek seeds by using diverse household processes, such as soaking, germination, boiling, fermentation, etc. Many extracts of each seed or leaf and its active components have been studied for their pharmacological effects and have been reported to have hypocholestraemic, antidiabetic, anti-inflammatory, antiulcer, analgesic, antipyretic, CNS-stimulant, antioxidant, wound healing and immune modulatory activity as well as gastro-protective and chemo-preventive activities [3].

Several beneficial biological and pharmacological properties are attributed to the fenugreek seeds and plants such as contraceptive and anti-fertility, and wound healing, anti-cancer, anti-microbial, anthelmintic and anti-nociceptive effects, respectively [4].

Taxonomy of *T. Foenum graecum* L [5]

Table 1: Taxonomy of *T. Foenum graecum L*

Domain	Eukarya
Kingdom	Plantae
Division	Magnoliophyta
Class	Magnoliopsida
Order	Fabales
Family	Fabaceae
Sub-Family	Trifoliae
Genus	Trigonella
Sub-genus	<i>Foenum graecum</i>
Species	<i>Trigonella Foenum graecum L</i>

Synonyms: Alholva, Bird's foot, Bockshornklee, Bockshornsame, Chandrika, Egypt fenugreek, Fenogrec, Fenugreco, Greek clover, and Greek hay.

Common Names: Fenugreek, bird's foot, Greek hayseed, Halba and Methi.

Vernacular Names ^[6, 7]

Table 2: Vernacular names of *T. Foenum graecum L*

Language	Common Names
Tamil	Meti
Malayalam	Uluva
Telugu	Menthulu
Kannada	Menthya
English	Fenugreek
Hindi	Methi, Saag methi, kasurimethi
Punjabi	Methi
Sanskrit	Methika
Assamese	Methi, Mithi
Romanian	Molotru
Dutch	Fenugriek

**Fig 1:** Plant of *Trigonella Foenum graecum L*

Orgin and Distribution

This plant is indigenous to the eastern coasts of the Mediterranean and North Africa. According to some experts and scholars, this plant primarily was indigenous to Iran and then was transferred to other areas. Fenugreek is widely grown in India, China, Africa, Algeria, Saudi Arabia, Pakistan, Egypt, Turkey, Ukraine, Spain, and Italy. This plant is frequently exported from India, China, Turkey, and Morocco. More than a hundred of wild and cultivated species of Fenugreek have been identified in the world. According to Iranica Flora, distribution of more than 32 species of this plant has been reported in many areas of Iran, including Azerbaijan, Isfahan, Fars Khora san, Semnan, Damghan, and also central regions ^[13].

Botanical Description: It is an erect hairy annual of the bean family, reaching 30-60 cm. The plant grows to a height of about 3feet, has three-part leaves, the long slender stems bear tripartite, toothed, grey-green obovate leaves, 20-25 mm (3/4-1 in) long. *Trigonella foenum-graecum L* has long stalked leaves up to 5 cm long stipules triangular, lanceolate, leaflets about 2.5 cms long, obovate to obanceolate. The root is a mass of fingery structures. The sissile axillary flowers are white or pale yellow. The thin, sword-shaped pods are 10-15 cm (4-6 in), with a curved beak-like tip, each carrying 10-20 seeds. The plant radiates a spicy odour which persists on the hands after touching. Wild and cultivated varieties exist. Flowers are 1-2, axillary, sessile, racemed, whitish or lemon yellow that bloom from June to July. Pod 5.7 cm long with a persistent beak, hairy with 10-20 seeds. Mild Mediterranean climates are most suitable. Plants mature in about four months. The flowering season for the herb fenugreek is generally midsummer. Fenugreek seeds are small (5 mm. long), hard, and brownish yellow the colour may varies. They are flattened and have a very characteristic rhomboidal outline. Nearly in the centre of one of the long, narrow sides is a small depression in which hilum and micropyle are situated, the former being distinctly visible as a whitish point; this depression is continued in the form of a furrow running diagonally across part of each of the adjoining sides, thus dividing the seed into two unequal lobes. If the seed is cut in a direction transverse to the side in which the hilum lies, so as to pass through both lobes of the seed, it will be found that the larger lobe contains two accumbent cotyledons - the smaller, the radical. Both are yellowish in colour, and surrounded by a darker, horny, translucent endosperm, which separates the radicle from the cotyledons. When it is soaked in water the endosperm swells and yields mucilage to the surrounding liquid. Entire seeds macerated in warm water burst their seed-coats by the swelling of the mucilage, and disclose the structure of the seed. The time of germination in soil usually varies from 3-10 days. Six to ten days after the fenugreek germination the seedlings produce the first leaf, which is usually simple; there is still no noticeable epicotyl as the first trifoliate leaf is formed after a further 5-8 days. Growth is slower under cooler and wetter conditions, and long periods of these conditions may cause a failure of plants to mature for seed harvest. The growth rate of fenugreek is slow at the beginning of the growing season, and leaf development is temperature-dependent the plant at various stages of growth along with the different parts of the seeds and they revealed that the seedlings have the highest diosgenin (and other steroid sapogenin) content compared to all other stages of growth. Although the main area cultivated with fenugreek is concentrated in some countries of Asia and Africa, however it has been distributed in many countries throughout the world under different environments. This wide distribution of its cultivation in the world is characteristic of its adaptation to variable climatic conditions and growing environments. Reports that fenugreek, ranging from cool temperate steppe to wet through tropical very dry forest life zone, is reported to tolerate an annual precipitation of 3.8-15.3 dm and an annual mean temperature of 7.8 - 27.5 °C. There are indications of the possible benefit of colder nights on the sapogenin content of the seed. Depending on the geographical source of the seed its sapogenin content, calculated as diosgenin, varied from 0.8-2.2 percent

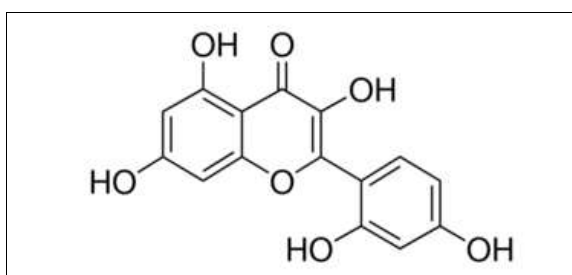
expressed on a moisture free basis. The highest saponin content was found in an Ethiopian sample and the lowest in a sample from Palestine. As a legume crop, it can condition the soil by fixing nitrogen from the atmosphere and can reduce the need for nitrogen fertilizer for subsequent crops. Because fenugreek is a nitrogen-fixing legume, seeds must be inoculated with appropriate *Rhizobium* species for

optimal growth. As a dry-land crop, its water requirements are low; use of fenugreek can reduce the cost of irrigation, save water and reduce eutrophication of surface water and limit contamination of ground water source [8, 12].

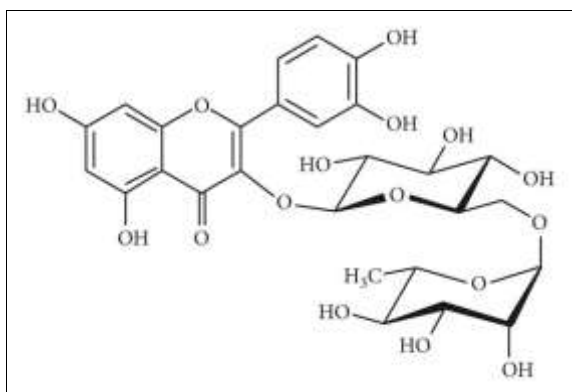
Chemical Constituents [13]

Table 3: Chemical constituents of *T. Foenum graecum L*

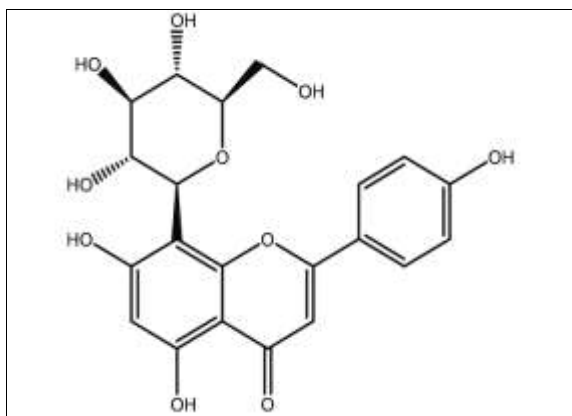
Chemical constituents and uses		
Alkaloids	Trimethylamine, neurin, trigonelline, choline, gentianine, carpaine, betain,	Analgesic activity and anti-inflammatory.
Aminoacids	Isoleucine, 4-hydroxyisoleucine, histidine, leucine, lysine, L-tryptophan, argenine.	Antidiabetic activity and helps in stimulating the secretion of insulin.
Saponins	Graecunins, fenugrin B, fenugreekine, trigofenosides A-G,	Anticancer activity, antilipidemic activity and antihypertensive activity.
Steroidal saponogens	Yamogenin, diosgenin, smilagenin, sarsapogenin, tigogenin, neogenin, gitogenin, yuccagenin, saponaretin.	Antilipidemic activity and antidiabetic activity.
Flavonoids	Quercetin, rutin, vitexin, isovitexin.	Antioxidant activity and hypoglycemic activity.
Fibres	Gum, neutral detergent fibre.	Promote digestion and gut health.
Lipids	Triacylglycerols, diacylglycerols, monoacylglycerols, phosphotidylcholine, phosphatidylethanoamine, free fatty acids.	Balance blood lipids and cholesterol.
others	Coumarin, lipids, vitamins, minerals, mucilage, proteins, bitter fixed oil.	Skin health and hair health.



Quercetin



Rutin



Vitexin

Pharmacological activity

Antioxidant activity

Flavonoids of extract have been investigated to possess anti-oxidant activity. In extract has been reported to prevent lipid per oxidation and hemolysis in RBC. It also been proved to raise the anti-oxidant levels and reduce the liver per oxidation in liver [14].

Immunomodulatory Activity: An agent that increases or reduces the immune responses is known as immunomodulator and such effect is immunomodulatory effect [15].

Anti-cataract Activity: The anti-cataract activity of *Trigonella Foenum graecum L* was evaluated in selenite induced *in vitro* medium [16].

Anticarcenogenic Activity: *Trigonella Foenum graecum L* showed potential protective activity against 7, 12-dimethylbenz (a) anthracene-induced breast cancer in rats. It inhibit the DMBA-induced mammary-hyperplasia and decreased its incidence [17].

Anti-diabetic activity: The *T. Foenum graecum L* saponin fraction significantly modulated the glycogen enzyme and disaccharidase activities in the intestine, it suppressed the increase of blood sugar level, increased the hepatic glycogen content and improved results in the oral glucose tolerance test [18].

Hyperlipidemic Activities: The effect of fenugreek was evaluated related to blood lipid level, fibrinogen, platelet aggregation, blood sugar and fibrinolytic activity [19].

Analgesic activity: In rats' study, *Trigonella Foenum graecum L* extract shows analgesic activity [19].

Antiadhesive activity: Adhesive property against helicobacter pylori has been studied. The anti-adhesive property was assessed by the inhibition of h pylori to stomach sections [19].

Hepato protective activity: A phenolic extract of *Trigonella Foenum graecum* L show increased cell viability by reducing oxidation^[19].

Neuroprotective Effect: Neurological illnesses, such as neuropathic pain, are among the most common, and empirical data show that inflammatory cytokines and microglial cells play a role in the aetiology of neuropathic pain^[20].

Benefits of fenugreek

1. Fenugreek seeds can be used to diminish reactive hyperglycemia in diabetic patients^[20].
2. Fenugreek leaves and seeds help in blood formation. They are good for preventing anemia and rundown conditions.
3. Fenugreek seed in lactating mothers increases the flow of milk^[21].
4. A paste of the fresh fenugreek leaves, applied on the face prevents pimples, blackheads, dryness of the face and early appearance of wrinkles.
5. It helps to remove dandruff in hair^[22-23].
6. All parts of the fenugreek plant showed antifungal potential and the magnitude of effect varies with plant parts species of fungus^[24].
7. Fenugreek is an important source of biologically active compounds useful for developing better and novel antifungal drugs^[25].
8. Kasuri methi can help in reducing the production of bad (LDL) cholesterol and triglycerides in your blood. Moreover, it also helps in increasing the level of good (HDL) cholesterol^[26].
9. Kasuri Methi helps in controlling the levels of glucose metabolism in the body^[27].
10. Petroleum ether extract of fenugreek seeds has significant anti-inflammatory and anti-arthritic activities which are due to the presence of linolenic and linoleic acids^[28].

Conclusion

Trigonella foenum-graecum L, or Fenugreek, is a versatile plant with a rich history of traditional use in medicine and cuisine. Its seeds and leaves contain a range of bioactive compounds with potential health benefits, including analgesic activity, anti-inflammatory, antidiabetic activity, helps in stimulating the secretion of insulin, anticancer activity, antilipidemic activity, antihypertensive activity, antioxidant activity and hypoglycemic activity. Further research is needed to fully explore the therapeutic potential of Fenugreek. Fenugreek has been used in traditional medicine for centuries for its various uses like stimulate lactation in nursing mothers, treat digestive issues (e.g., constipation, diarrhoea), lower blood sugar levels, enhance fertility, reduce inflammation and pain, promote digestion and gut health, balance blood lipids and cholesterol level, promote skin health and hair health.

References

1. Nair R, Kalariya T, Sumitra C. Antibacterial activity of some selected Indian medicinal flora. *Turkish Journal of Biology*. 2005;29:41-47.
2. Parthasarathy VA, Kandinnan K, Srinivasan V. *Organic spices*. New Delhi: New India Publishing Agencies; c2008. p. 694.

3. Kala S. Management of non-insulin dependent diabetes mellitus by using traditional medicinal plant products [Ph.D. thesis]. Hisar, India: Haryana Agricultural University; c1997.
4. Al-Habori M, Raman A. *Pharmacological properties*. London: Taylor & Francis; 2002. p. 162.
5. Brar JK, Rai DR, Singh A, Kaur N. Biochemical and physiological changes in fenugreek (*Trigonella foenum-graecum* L.) leaves during storage under modified atmosphere packaging. *Journal of Food Science and Technology*. 2013;50(4):696-704.
6. Blank I. The flavor principle of fenugreek. Nestlé Research Center. 211th ACS Symposium. New Orleans; c1996. p. 24-28.
7. Ahmed MA, Ibrahim OM, Elham AB. Effect of bio and mineral phosphorus fertilizer on the growth, productivity, and nutritional value of fenugreek (*Trigonella foenum-graecum* L.) in newly cultivated land. *Research Journal of Agriculture and Biological Sciences*. 2010;6(3):339-348.
8. Analava M, Debaprasad B. Dose-dependent effects of fenugreek composite in diabetes with dyslipidemia. *Internet Journal of Food Safety*. 2004;8:49-55.
9. Basu SK. Seed production technology for fenugreek (*Trigonella foenum-graecum* L.) in Canada [Master's thesis]. Alberta, Canada: University of Lethbridge; 2006. p. 202.
10. Basu SK, Acharya SN, Thomas JE. Application of phosphate fertilizer and harvest management for improving fenugreek (*Trigonella foenum-graecum* L.) seed and forage yield in the dark brown soil zone of Canada. *KMITL Science and Technology Journal*. 2008;8(1):1-7.
11. Basu SK, Acharya SN, Bandara MS, Friebel D, Thomas JE. Effects of genotype and environment on seed and forage yield in fenugreek (*Trigonella foenum-graecum* L.) grown in western Canada. *Australian Journal of Crop Science*. 2009;3(6):305-314.
12. Sowmya P, Rajyalakshmi P. Hypocholesterolemic effect of germinated fenugreek seeds in human subjects. *Materia Medica*. 1999;53:359-365.
13. Dini M. Scientific name of medicinal plants used in traditional medicine. Tehran: Forest and Rangeland Research Institute; 2006. p. 299.
14. Moskaug JO, Carlsen H, Myhrstad MC, Blomhoff R. Polyphenols and glutathione synthesis regulation. *American Journal of Clinical Nutrition*. 2005;81:277S-283S.
15. Shetty AK, Salimath PV. Renoprotective effects of fenugreek (*Trigonella foenum-graecum*) during experimental diabetes. e-SPEN, the European e-Journal of Clinical Nutrition and Metabolism. 2009;4:e137-e141.
16. World Health Organization. Prevention of avoidable blindness and visual impairment. Provisional agenda item 4.9, 117th session. EB117/35. 2005.
17. Khalil W, Roshdy H, Kassem S. The potential therapeutic role of fenugreek saponin against Alzheimer's disease: Evaluation of apoptotic and acetylcholinesterase inhibitory activities. *Journal of Applied Pharmaceutical Science*. 2016;6:166-173.
18. Lee EEL. Genotype X environment impact on selected bioactive compound content of fenugreek (*Trigonella foenum-graecum* L.) [Master's thesis]. Alberta, Canada:

- University of Lethbridge; 2006. p. 1-150.
19. Srichamroen A, Thomson ABR, Field CJ, Basu TK. *In vitro* intestinal glucose uptake is inhibited by galactomannan from Canadian fenugreek seed (*Trigonella foenum-graecum* L.) in genetically lean and obese rats. *Nutrition Research*. 2008;29:49-54.
 20. Raghuram TC, Sharma RD, Pasricha S, Menon KK, Radhaiah G. Glycaemic index of fenugreek recipes and its relation to dietary fiber. *International Journal of Diabetes in Developing Countries*. 1992;12:1-4.
 21. Mathur J, Khatri P, Samanta KC. Pharmacognostic and phytochemical investigations of *Amaranthus spinosus* (Linn.) leaves. *International Journal of Pharmacy and Pharmaceutical Sciences*. 2010;2:121-124.
 22. Bhatia AL, Manda K, Patni S, Sharma AL. Prophylactic action of linseed (*Linum usitatissimum*) oil against cyclophosphamide-induced oxidative stress in mice brain. *Journal of Medicinal Food*. 2006;9(2):261-264.
 23. Al-Habori M, Raman A. Pharmacological properties of fenugreek. In: Petropoulos GA, editor. *The genus Trigonella*. London: Taylor and Francis; 2002. p. 163-82.
 24. Tiran D. The use of fenugreek for breastfeeding women. *Complementary Therapies in Nursing and Midwifery*. 2003;9(3):155-156.
 25. Fatima G, Mehdi T, Zehara L. Pharmacological action of fenugreek. Era College of Pharmacy, Era University, Lucknow.
 26. Haxhiraj M, White K, Terry C. The role of fenugreek in the management of type 2 diabetes.
 27. Pundarikakshudu K, Shah DH, Panchal AH, Bhavsar GC. Anti-inflammatory activity of fenugreek (*Trigonella foenum-graecum* L.) seed petroleum ether extract.