

## THE HEALTH BENEFITS OF TRIGONELLA FOENUM-GRAECUM: A REVIEW

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### Abstract:

There has been resurgence in the consumption and demand for medicinal plants. Medicinal plants are finding use as Pharmaceuticals, Nutraceuticals, Cosmetics and Food supplements. Even as Traditional source of medicinal and they continue to play pivotal role. Fenugreek was used to ease childbirth and to increase milk flow. It is still taken by Egyptian women for menstrual pain and as hiba tea to ease stomach problems of tourists. Seed of fenugreek contain Flavonoids like quercetin, rutin, vetexin, saponins like Graecunins, fenugrin B, fenugreekine, Amino acids like as Isoleucine, 4-Hydroxyisoleucine, Histidine, Leucine, lysine, Alkaloid- trigonellin, it also contain mucilage, sugars, an. Medicinal Action and Uses of Fenugreek like Allergies, Appetite/loss of Catarrh/bronchial, Cholesterol/high, Diabetic Retinopathy, Gas, Gastric Disorders, Lung Infections, Mucus Excessive, Throat/sore, Abscesses, Anemia, Asthma, Boils, Body Odour, Bronchitis, cancer, Eyes/swollen, Fevers, Gallbladder Problems, Heartburn, Inflammation, Sinus Problems, Ulcers, Uterine Problems, Water Retention focused the investigator's attention on this plant.

**Key Words:** Trigonella foenum-graecum, Flavonoids, Alkaloids, Medicinal use, Retinopathy.

### Introduction:

Plants are frequently used in therapeutics from times immemorial. The documentation of therapeutic utility of plants can be seen from vedic period. Now a days therapeutic utility of many plants are identified. Among of them medicinal plants fenugreek are also one of the important plant. Trigonella foenum - graecum (Linn.) belonging to the family Papilionaceae commonly known as Fenugreek is a aromatic, 30-60 cm tall, annual herb, cultivated throughout the country. A nearly smooth erect

annual. Stipulets not toothed. Leaflets 2-2.5 cm long, oblanceolate – oblong, toothed. Flowers 1-2, axillary, sessile. Calyx-teeth linear. Corolla much exerted. Pod 5-7.5 cm long, with a long persistent beak, often falcate, 10-29 seeded, without transverse reticulations.



Kingdom: Plantae  
Division: Magnoliophyta  
Class: Magnoliopsida  
Order: Fabales  
Family: Fabaceae  
Genus: *Trigonella*  
Species: *T. foenum-graecum*  
**Botanical name:-** *Trigonella foenum-graecum*

### Morphology:

1. **Appearance:** Solid- rhomboidal seeds, 3 to 5 mm long, 2 mm thick. Hard, pebble-like.
2. **Colour:** Yellowish brown-light brown
3. **Odour:** characteristic spicy
4. **Taste:** Bitter and mucilaginous

### Chemical constituents:

**Alkaloids:** Trimethylamine, Neurin, Trigonelline, Choline, Gentianine, Carpaine and Betain.

**Amino acids:** Isoleucine, 4-Hydroxyisoleucine, Histidine, Leucine, lysine, L-tryptophan, Arginine.

**Saponins:** Graecunins, fenugrin B, fenugreekine, trigofoenosides A-G.

**Steroidal saponogens :** Yamogenin, diosgenin, smilagenin, sarsasapogenin, tigogenin, neotigogenin, gitogenin, neogitogenin, yuccagenin, saponaretin.

**Flavonoids:** Quercetin, rutin, vetixin isovetixin.

**Fibers:** Gum, neutral detergent. fiber

**Other :** Coumarin, lipids, vitamins, minerals. 28%

mucilage; 22 % proteins; 5 % of a stronger-swelling, bitter fixed oil.

### Here are the few health benefits of FENUGREEK

1. Fenugreek seeds are rich in vitamin E and is one of the earliest spices known to man as preservative and added to pickles..
2. Fresh fenugreek leaves are beneficial in the treatment of indigestion, flatulence and a sluggish liver.
3. The dried leaves of the fenugreek is used as a quality flavour for meat, fish and vegetable dishes.
4. An infusion of the leaves is used as a gargle for recurrent mouth ulcers. A gargle made from the seeds is best for ordinary sore throat.
5. Fresh Fenugreek leaves paste applied over the scalp regularly before bath helps hair grow, preserves natural color, keeps hair silky and also cures dandruff.
6. Fenugreek seeds made in gruel, given to nursing mothers increase the flow of milk.
7. Topically, the gelatinous texture of fenugreek seed may have some benefit for soothing skin that is irritated by eczema or other conditions. It has also been applied as a warm poultice to relieve muscle aches and gout pain.
8. Fenugreek seeds reduces the amounts of calcium oxalate in the kidneys which often contributes to kidney stones. In animal studies, fenugreek appeared to lessen the chance of developing colon cancer by blocking the action of certain enzymes.
9. Traditional Chinese herbalists used it for kidney problems and conditions affecting the male reproductive tract.
10. Fenugreek is currently used as a source of the steroid diosgenin, one of its active constituents from which other steroids can be synthesized.

### Pharmacological Uses:

1. Antidiabetic activity
2. Antiplasmodic activity
3. Hypolipidemic activity
4. Immunological activity
5. Antibacterial activity
6. Anthelmintic activity
7. Anti-inflammatory and analgesic activity.
8. Antioxidant activity.

### Glucose-lowering effects:

The galactomannan-rich soluble fiber fraction of fenugreek may be responsible for the antidiabetic activity of the seeds. Insulinotropic and antidiabetic properties also have been associated with the amino acid 4-hydroxyisoleucine that occurs in fenugreek at a concentration of about 0.55%. In vitro studies have indicated that this amino acid causes direct pancreatic  $\beta$ -cell stimulation. Delayed gastric emptying and inhibition of glucose transport also have been postulated as possible mechanisms. A study of alloxan-induced diabetic mice has shown that the hypoglycemic activity of dialysed fenugreek seed extract was comparable to that of insulin (1.5 U kg(-1)). Fenugreek seed extract also improved intraperitoneal glucose tolerance in normal mice.

### Cholesterol-lowering effects:

Fecal bile acid and cholesterol excretion are increased by fenugreek administration. This may be secondary to a reaction between the bile acids and fenugreek-derived saponins causing the formation of micelles too large for the digestive tract to absorb. Another hypothesis attributes the cholesterol-lowering activities to the fiber-rich gum portion of the seed that reduces the rate of hepatic synthesis of cholesterol. It is likely that both mechanisms contribute to the overall effect.

### Antitumor activity:

A potential protective effect of Fenugreek seeds against 7,12-DMBA-induced breast cancer in rats. At 200 mg/kg b.wt., Fenugreek seeds' extract significantly inhibited the DMBA-induced mammary hyperplasia and decreased its incidence. Epidemiological studies also implicate apoptosis as a mechanism that might mediate the Fenugreek's anti-breast cancer protective effects.

### Antioxidant effect:

A study has demonstrated the potent antioxidant properties of the fenugreek seeds. In the study, scientists evaluated the protective effect of polyphenol-rich extract from the seeds of fenugreek against hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>)-induced oxidation in normal and diabetic human erythrocytes (RBCs).

### Anthelmintic Activity:

Seeds of *Trigonella Foenum-graecum* showed marked and potent anthelmintic activity. Alcoholic extract

had shown promising result as anthelmintic activity and water extracts has also shown activity up to lesser extent. There-fore an attempt has been made to evaluate anthelmin-tic activity of seeds on adult earthworm *Pheritimapostuma*.

### Antibacterial activity:

The seed extracts of Fenugreek were found more effective against *Escherichia coli*, *Salmonella typhi* and *Staphylococcus aureus*. seeds were boiled in water to produce aqueous extracts.

### Analgesic activity:

The analgesic potential of *Trigonella foenum – graecum* (TFG) seeds in rats by using tail flick method in comparison to established analgesic drug diclofenac potassium (DIP, 10 mg/kg, p.o.). Successively extracted (aqueous and ethanol) extracts of TFG seeds were administered 1 h prior to pain induction in dose range of 50, 100 and 200mg/kg orally.

### Potential Dangers:

- (a) **Allergies:** Individuals with peanut allergies should use with caution or avoid all together. Otherwise, fenugreek is extremely safe.
- (b) **Side Effects:**
  1. Fenugreek may increase the risk of bleeding.
  2. Fenugreek may reduce potassium levels in the blood. Numbness, facial swelling, breathing difficulty and fainting are likely a cause of an allergic reaction.
  3. Dizziness, diarrhea and gas when fenugreek is used at recommended doses.
  4. Fenugreek may cause loose stools in some women, can produce uterine contractions ,hypoglycemia in some mothers.

### Conclusion:

*T.FOENUM GRAECUM* seeds are found easily in our kitchen we can take it easily in our daily diet and cure our diseases. *T. foenum-graecum* was found to possess different activities such as Anticancer, Anti-Inflammatory, Antiseptic, Aphrodisiac, Astringent, Bitter, Demulcent, Emollient, Expectorant, Anthelmintic, Wound healing and Gastro protective. Fenugreek seeds are a rich source of the polysaccharide galactomannan. They are also a source of saponins such as diosgenin, yamogenin, gitogenin, tigogenin, and neotigogenin. flavonoids and amino acid, alkaloids, Other bioactive constituents of

fenugreek include mucilage, volatile oils, some side effect also found in fenugreek seeds like as Fenugreek may increase the risk of bleeding, Fenugreek may reduce potassium levels in the blood, Numbness, facial swelling, breathing difficulty and fainting are likely a cause of an allergic reaction, Dizziness, diarrhea and gas when fenugreek is used at recommended doses, Fenugreek may cause loose stools in some women, can produce uterine contractions , hypoglycemia in some mothers.

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