

Fenugreek

OVERVIEW

As in Figure 1, Native to southern Europe, western Asia, and the Mediterranean region, fenugreek is an aromatic herb resembling clover. As the plant ages, seed-containing pods begin to form. Fenugreek seeds, with their unique properties, are used not only as a flavoring agent in beverages, food, tobacco, and fake maple syrup due to their similar taste and smell to maple syrup but also in traditional medicine and as a spice. In India, fenugreek leaves are consumed as a vegetable.

Regulation: Had been registered in the United States of America (USA) and the Kingdom of Saudi Arabia.

Registration number (S.A.): 2017-1115-11.

General information:

- ✓ **Registered company:** ACKHART

Mechanisms of action

The essential part is the seeds, but the leaves can also be used as a vegetable or herb. Flavonoids, alkaloids, coumarins, and saponins are some of the components of fenugreek. Fenugreek is famous for its bitter flavor and odor, and this is because the seeds contain volatile compounds called alkaloids.

The active ingredients are trigonelline, 4-hydroxyisoleucine, and sotolon. Steroid saponins, such as diosgenin, yamogenin, protodioscin, and trigonosides, are additional components of fenugreek.

Galactomannan is one type of dietary fiber that is abundant in fenugreek seeds. They have roughly 50% pectin and dietary fiber. Additionally, an excellent source of protein is fenugreek seed. 4-hydroxyisoleucine makes up about 80% of the seeds' free amino acid content. It also has some properties, such as milk supply for humans and animals. In addition, different fatty acids can be found in seed oil.

- Anticancer effects

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According to epidemiological studies, a diet high in fresh vegetables, especially fenugreek leaves, may protect against various cancer types, such as gallbladder cancer. This results from the interference with the signaling pathways of cancer cells and antioxidant properties.

- Antidiabetic effects

Dietary fibers and pectin components improve glucose tolerance test results, postprandial and fasting blood glucose, and urine glucose levels in diabetic individuals. This results from improved GIT transient time and glucose absorption. Also, 4-hydroxyisoleucine enhances insulin release.

- Fenugreek has topical Anti-inflammatory and antioxidant effects.
- Coumarin in fenugreek possesses antiplatelet effects by affecting the platelet aggregations.
- Fenugreek extract has no bactericidal effects, but the gel may be used to treat GERD, dyspepsia, and mouth ulcers due to the inhibition of lipid peroxidation effects.
- Hormonal effects

The seeds increase testosterone levels in males, while Fenugreek extract raises levels of Luteinizing Hormone (L.H.), Follicular Stimulating Hormone (FSH), and estradiol in females.

- Renal protective effects: Fenugreek reduces the disposition of calcium oxalate in the kidneys.
- Stimulating effects: On the uterus, intestine, and heart.
- Flavonoids may cross the placenta and have pro-oxidant and DNA-damaging effects in addition to the teratogenic effects of the saponins' hormonal activity. Additionally, fenugreek suppresses hematopoietic regulatory components in bone marrow, modifying the fetus's hematological count.
- The fibers in fenugreek increase the feeling of satiety, which helps in weight loss effects.
- Indications
- Type-2 diabetes, reducing the pain associated with dysmenorrhea, sexual dysfunction.
- Fenugreek does not affect Benign Prostatic Hyperplasia (BPH).
- There is another indication that there is a need for more clinical investigations:
 - o Alopecia, athletic performance, dermatitis such as eczema, cold diseases such as cough, GERD, gout.
 - o Some clinical suggestion supports that fenugreek enhances lactation.
 - o Male infertility and menopausal symptoms, but it is still unclear if it has beneficial effects or not.
 - o Muscle strength, myalgia, and Parkinson's disease.
 - o Polycystic ovary syndrome and vaginitis.

Dosage and route of administration

Adults

Oral route

Powder: 5-10 g daily for three years, while a high dose of 100 g used for 20 days.

Seed extract: 0.6-1.2 g daily for three months.

Topical route: no specific doses.

Children

The levels of fenugreek typically present in food items are thought to be safe, but it's unclear if higher dosages are safe, so Children should not use it as a supplement.

Dose in renal/hepatic failure/geriatric dose

Some studies have documented an increase in the frequency of micturition in renal patients. However, it is better to avoid it in hepatic patients because the liver is the metabolism organ, and in some cases, it has a high level of epoxy carotenoids.

Geriatric dose: no particular information.

Indicated for pediatrics: Likely safe in amounts commonly found in food, but high amounts seem to be harmful.

Safety

While fenugreek is generally known to be safe in the amount found in foods, it's important to note that a supplement is safe with specific doses for adults but not for children. It's crucial to be aware of the potential side effects, such as nausea, hypoglycemia, dyspepsia, diarrhea, bloating, and abdominal pain, and to be cautious of allergic reactions that may result orally or topically.

The uterine stimulatory effects of fenugreek make it unsafe during pregnancy. However, during lactation, it may stimulate milk production, which makes it safe.

Possible side effects

- o Orally: nausea, hypoglycemia, dyspepsia, diarrhea, bloating, and abdominal pain.
- o Allergic reactions may result orally or topically.
- o Dizziness and headache, micturition.

Drug interactions

- o Increase the effect of antiplatelet and anticoagulant drugs.



Figure 1: Fenugreek.

- o Increase the hypoglycemia of hypoglycemic drugs.
- o Inhibit the conversion of Clopidogrel to its active form.
- o Increase the hypotensive effect of metoprolol.
- o Reducing theophylline level.
- o Enhancement of the warfarin effects.
- o Urine scented like maple syrup from fenugreek may be misinterpreted as having Maple Syrup Urine Disease (MSUD).

Toxicology

To prevent accidental overdose, the dose should not exceed 21 g/60 kg.

Contraindication: Not available.

Precaution

Precautions should be taken for renal, hepatic, pregnant, and pediatric patients.

Monitoring requirement: No information available.

Look alike/sound alike: Not available.

High alert: Not available.

Boxed warning or alert issue: Not available.

Toxicity if antidot required: Not available.

Storage condition: Not available.

Patient counseling

- o Tell your doctor before using fenugreek products.
- o Please do not take it with any antilipidemic, antidiabetic, or antihypertensive medications.
- o Avoid using fenugreek supplements during pregnancy or plan to be pregnant.
- o This natural product may interfere with some lab results, so you must tell your doctor before you book surgery or a lab test.
- o Please do not take this product when allergic to any of its ingredients.
- o Do not receive this product when you are suffering from a GIT problem.
- o Stop using fenugreek when you notice allergy symptoms or any unusual symptoms.

Cost Analysis

Country	Ingredient	Registration No.	Company	Price (S.R.)
Canada	Natural Health Product	NPN 00242241	Canada Inc	190
United state	ABC Multi-Fiber Blend	UPC: 013886030016	Aerobic life	113
United state	Acid 2 Alkaline Original	NB-ALK-CP-1027	Natures brands	105
America	Acti-fem	82.167.96.51	North American Herb and Spice	127
Saudi Arabia	Fenugreek capsule	2017-1115-11	ACKHART	98

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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