

## Chapter 34

# Potential Health Benefits of Fenugreek With Multiple Pharmacological Properties

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### ABSTRACT

*Fenugreek is one of the familiar spices found in human food and has been used extensively for curing numerous disorders. It provides natural food fibers and other nutrients required in the human body. It is used in functional foods, traditional foods, and nutraceuticals as well as in physiological uses such as antidiabetic agent, antibacterial, hypocholesterolemic, hypoglycemic, antioxidant, enzymatic pathway, and modifier gastric stimulant. It has a valuable influence on digestion and also has the capability to modify food texture. In modern food technology, it is used as a food stabilizer, adhesive, and emulsifying agent due its fiber, protein, and gum content. Recent pharmacological exploration of the seed extract of this plant discovered anticancer properties. Although it has many potential effects, there are some side effects as well; therefore, there is a greater need to study the pharmacological and toxicological effects of fenugreek to examine its clinical efficacy and safety.*

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## **INTRODUCTION**

Fenugreek is a prominent herb in the practices of Ayurvedic medicine (The Ayurvedic Pharmacopoeia of India). Fenugreek, with a diversity in its forms and modes of use, has elicited its potential health benefits as a functional food in recent years, which until now has been a part of the traditional system of curing skin conditions and many other diseases (Basch et al., 2003).

Furthermore, fenugreek seeds are currently used as an antidiabetic agent, antibacterial, antilithogenic, antiulcer, anthelmintic, immunomodulatory effect, enzymatic pathway modifier, gastric stimulant, hypocholesterolemic, hypoglycemic, antioxidant, antiulcer, antifertility, and anti-anorexia agent.

Health benefits involve curing numerous disorders, from thyroid to diabetes. Fenugreek seeds, leaves, and powder are commonly used as household spices and herbs. The family of *Fabaceae* includes a number of important food plants, and Fenugreek (*Trigonellafoenum-graecum*) is one among them, it was also named as Trigonella, meaning “little triangle” in Latin language owing to its yellowish-white triangular flowers (Flammang et al., 2004). It has its origin in Central Asia in 4000 BC (Altuntas et al., 2005).

Earlier in 1500 BC in Egypt, description and health benefits of Fenugreek had been documented in the Ebers Papyrus (one of the oldest maintained medicinal document) (Betty, 2008).

It is known as Methi (Hindi, Marathi, Punjabi, and Urdu), Hulba (Arabic), Moshoseitaro (Greek), Uluva (Malayalam), Dari (Persian), Shoot (Hebrew), while it is known as hayseed in English.

It is commercially available and grown in India, Pakistan, Afghanistan, Iran, Spain, Nepal, France, Egypt, Morocco, North Africa, Turkey, Argentina and the Middle East (Flammang et al., 2004, Altuntas et al., 2005).

For thousands of years, it was one of the ancient conventional medicinal plants cultivated in the Indian subcontinent, Middle East, Canada, North Africa, Russia, United Kingdom, Mediterranean Europe, US, Australia, and parts of West Asia (Acharya et al., 2008).

It has various potential pharmacological effects in modern medicine such as antidiabetic, antilipidemic, antioxidant, hypocholesterolemic, hepatoprotective, antifungal, anti-inflammatory, antibacterial, anticarcinogenic, antiulcer, antilithogenic and neuroprotective effects in both clinical trials in humans as well as in experimental animals (Neelkanthan et al., 2014).

Fenugreek contains 20-25% protein, 45-50% dietary fiber, 20-25% mucilaginous soluble fiber, 2-5% steroidal saponins, 6-8% fixed fatty acid, and essential oils.

Breastfeeding is important for a baby’s development, but some mothers suffer to produce an adequate amount. Initial research suggests that fenugreek was conventionally advised for increasing milk production in lactating women (Ghedira et al., 2010; Bukhari et al., 2008; Damanik et al., 2004). The objective of this chapter is to highlight the key phytochemicals and pharmacological applications of fenugreek on human health.

## **Botanical Description of Fenugreek**

Fenugreek (*Trigonellafoenum-graecum*), belongs to the *Fabaceae* family. Fenugreek is an annual legume, diploid ( $2n = 16$ ) plant (Ahmad et al., 1999) with no aneuploidy (Petropoulos, 2002; Trease and Evans, 2002; Flammang et al., 2004). The botanical classification of fenugreek has been shown in Table 1.

Morphologically, fenugreek is an upright, aromatic annual spice closely similar to clover with cylindrical stem grown up to 30-60 cm long. It has roots that are huge finger-like structures (Basu, 2006; Mehrafarin et al., 2011; Moradikor and Moradi, 2013). Leaves of fenugreek are pinnate trifoliolate, long

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