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A REVIEW ON *TRIGONELLA FOENUM-GRAECUM* ACCORDING TO TRADITIONAL SYSTEMS OF MEDICINE

MMM.Nifras[1*], JF.Fatheena[1], AM.Muthalib[1]

[1]*Demonstrator, Institute of Indigenous Medicine, University of Colombo, Sri Lanka*
[1]*Demonstrator, Institute of Indigenous Medicine, University of Colombo, Sri Lanka*
[1]*Senior Lecturer, Institute of Indigenous Medicine, University of Colombo, Sri Lanka*

ABSTRACT

Fenugreek (Trigonella foenum-graecum L.) is an erect annual herb which belongs to the family Fabaceae/ Leguminosae. It is cultivated as leafy vegetable, condiment and as a medicinal plant. The fresh tender leaves and stem are consumed as curried vegetables and the seeds are used as spices for flavouring almost all the dishes. It is an old medicinal plant which has been commonly used in traditional systems of medicine. This study was carried out to give an overview on Fenugreek according to traditional systems of medicine and to review the recent scientific evidences of phytochemical and pharmacological studies systematically. Phytochemical evidences suggest major constituents found in Fenugreek are alkaloids, flavonoids, steroids, saponins etc. Fenugreek contains a number of steroidal sapogenins, specially diosgenin found in oily embryo. Two furastanol glycosides, F-ring opened precursors of diosgenin have been reported, as also hederagin glycosides. the alkaloid trigonelline, trigocoumarin, trimethyl coumarin and nicotinic acid are also present. From the seeds, mucilage as a prominent constituent, along with vitexin and isovitexin have been isolated. The stem contains diosgenin and trigoforin. Saponins isolated from leaves. Disogenin, gitogenin and tigogenin isolated from seeds. Pharmacological evidences suggest Fenugreek possesses pharmacological activities such as Anti diabetic, Anti-dyslipidemic activity, Immunomodulatory effect, Anti-oxidant activity, Anti-inflammatory activity and Anti-cancer activity.

KEY WORDS: ***Fenugreek, Methi, Hulba, Methika, Venthayam***

INTRODUCTION

A spice is a dried seed, fruit, root, bark or flower of a plant or a herb used in small quantities for flavor, color or as a preservative. The spices and Herbs used for flavor, aroma and medicinal properties derive a special value from the said factors.[1] Spices and herbs have been in use for centuries both for culinary and medicinal purposes. Spices not only enhance the flavor, aroma, and color of food and beverages, but they can also protect from acute and chronic diseases. Long before modern medicine, spices were valued for their ability to help individuals in disease prevention and health promotion.[2]

Fenugreek (*Trigonella foenum-graecum* L.) is an erect annual herb which belongs to the family Fabaceae/ Leguminosae. It is cultivated as leafy vegetable, condiment and as a medicinal plant. The fresh tender leaves and stem are consumed as curried vegetables and the seeds are used as spices for flavouring almost all the dishes.[3] It is an old medicinal plant which has been commonly used in traditional systems of medicine for therapeutic purposes.

OBJECTIVE

1. To review the literature on 'Fenugreek'
2. To review the recent scientific evidences of phytochemical and pharmacological studies of Fenugreek systematically.

METHODOLOGY

A systematic literature search was carried out to review articles and to gather the information available in the literature regarding Fenugreek in the view of description of the plant, chemical constituents, part used, therapeutic action and therapeutic uses, and recent scientific evidences of phytochemical and pharmacological activities. All the available information on Fenugreek was compiled from Unani, Ayurveda and Siddha textbooks & Pharmacopoeias and electronic databases such as Google scholar and PubMed.

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RESULTS

Scientific Classification of Fenugreek[4]
Kingdom: Plantae
Super division: Angiosperms
Division: Eudicots
Class: Rosids
Order: Fabales
Family: Fabaceae
Genus: *Trigonella*
Species: *Foenum*

Vernacular names[5,6]
English: Fenugreek
Tamil: Venthayam
Sinhala: Uluhal
Unani Tibbi name: Methi/ Hulba
Sanskrit name: Methika

Description of the plant[6]
An erect annual herb,
Leaves: pinnate, 3 foliate, leaflet toothed;
Flowers: pale yellow or white, 1 or 2 axillaries; calyx lobes subulate;
Pods: 5-8cm long, with a long persistent beak, 10-20 seeded;
Seeds: greenish brown, oblong with a deep groove across one corner, giving the seeds a hooked appearance.
Parts used: Seeds[6]

CHEMICAL CONSTITUENTS

Fenugreek contains a number of steroidal sapogenins, specially diosgenin found in oily embryo. Two furastanol glycosides, F-ring opened precursors of diosgenin have been reported, as also hederagin glycosides. the alkaloid trigonelline, trigocoumarin, trimethyl coumarin and nicotinic acid are also present. From the seeds, mucilage as a prominent constituent, along with vitexin and isovitexin have been isolated. The stem contains diosgenin and trigoforin. Saponins isolated from leaves. Disogenin, gitogenin and tigogenin isolated from seeds.[5]

Trigonelline, a major alkaloid component of fenugreek, is reported to be responsible for most of its pharmacological activities.[7]

PROPERTIES OF FENUGREEK ACCORDING TO UNANI, AYURVEDA AND SIDDHA SYSTEMS OF MEDICINE

Table 01 shows the properties of the Fenugreek according to the traditional systems of medicine.
Table 01: Properties of Fenugreek according to Unani, Ayurveda and Siddha systems of medicine

Unani[6]	Ayurveda[5,8]	Siddha[9]
Taste: Sharp bitter **Mizaj (Temperament):** Hot 2^0 and Dry 2^0 **Naf 'e Khas (Actions):** Mulattif (Demulcent) Mudir-e-Baul (Diuretic) Mudir-e-Haiz (Emmenagogue) Mulaiyyin (Laxative) Munaffis-e-Balgham (Expectorant) Muhallil-e-Waram (Anti-inflammatory)	**Rasa (taste):** Tikta (Bitter) **Vipaka (post digestive effect):** Katu (Pungent) **Virya (potency):** Usna (Hot) **Guna (attributes):** Snigdha (Unctous) **Karma:** Deepana Kaphahara Rucya Vatahara	**Cuvai:** Kaippu **Gunam:** Noymai **Virium:** Tadpam **Pirivu:** Kaarppu **Ceykai:** Akadduvayvakatri, Ciruneerperukki, Kaamamperukki, Thuvarrppi, Ullazhaatri, Uramaakki, Varadchiyakatri

THERAPEUTIC USES OF FENUGREEK ACCORDING TO UNANI, AYURVEDA AND SIDDHA SYSTEMS OF MEDICINE

Table 02 shows the Therapeutic uses of Fenugreek according to the traditional systems of medicine.
Table 02: Therapeutic uses of Fenugreek according to Unani, Ayurveda and Siddha systems of medicine

Unani[6]	Ayurveda[8]	Siddha[9]
• Sara (Epilepsy) • Niqras (Gout) • Istisqa-e-Ziqqi (Dropsy) • Sual Muzmin (Chronic cough) • Izm-e-Tihal-o-Kabid (Enlargement of Spleen and Liver) • Waram-e-Rahem (Uteritis)	• Aruci (Tastelessness) • Grahani (Malabsorption syndrome) • Jvara (Fever) • Prameha (Increased frequency turbidity of urine)	• Ilaippu Noy • Ceethakkazhichchal • Kuruthi Azhal • Neerizhivu • Neervedkai • Udal Erichal • Vellai

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COMPOUND FORMULATIONS OF FENUGREEK ACCORDING TO UNANI, AYURVEDA AND SIDDHA SYSTEMS OF MEDICINE

Table 03 shows the Compound formulations of Fenugreek according to the traditional systems of medicine.

Table 03: Compound formulations of Fenugreek according to Unani, Ayurveda and Siddha systems of medicine

Unani[6]	Ayurveda[5,8]	Siddha[9]
• Habb-e-Khabsul Hadeed • Qairuti Arad Krasna • Laooq Habb-ul-Sanobar • Marham-e-Dakhliyun	• Methika Modaka • Methika Paaka • Methika Seed Powder • Mustakaarista • Mrtasanjeevanee Suraa	• Cunaivatral Choornam • Kanattailam • Kapaada Maaththirai • Korocanaiththuhal

DOSAGE OF FENUGREEK ACCORDING TO UNANI, AYURVEDA AND SIDDHA SYSTEMS OF MEDICINE

Table 04 shows the Dosage of Fenugreek according to the traditional systems of medicine.

Table 04: Dosage of Fenugreek according to Unani, Ayurveda and Siddha systems of medicine

Unani[6]	Ayurveda[8]	Siddha[9]
4-6g	3-6g (Powder)	3-6g (Powder)

RECENT SCIENTIFIC EVIDENCES

Pharmacological activities of Fenugreek

Following table shows the recent evidences of pharmacological activities of Fenugreek.

Table 05: Pharmacological activities of Fenugreek

Pharmacological activity	References
Anti-diabetic activity[10,11,7,12,13,14,15,16]	Najdi RA, et al. (2019) Geberemeskel GA, et al. (2019) Subramanian SP, et al. (2014) Haeri MR, et al. (2012) Moorthy R, et al. (2010) Xue WL, et al. (2007) Puri D, et al. (2002) Zia T, et al. (2001)
Anti-dyslipidemic activity[14,17,7,18]	Xue WL, et al. (2007) Chen Z, et al. (2017) Subramanian SP, et al. (2014) Upma C, et al. (2013)
Immunomodulatory effect[19]	Hafeez BB, et al. (2003)
Anti-oxidant activity[20,18,21]	Tewari D, et al. (2020) Upma C, et al. (2013) Kaviarasan S, et al. (2007)
Anti-inflammatory activity[22]	Ahmadiani A, et al. (2001)
Anti-cancer activity[23]	El Bairi K, et al. (2017)

CONCLUSION

Fenugreek is traditionally consumed as a medicinal plant since prehistoric time and is undoubtedly considered safe to human health. Its nutritional value and biologically active compound profile are unquestionably appreciated by medical science. Fenugreek is rich in fiber, protein and due to its valuable bioactive components, such as alkaloids, flavonoids, steroids, saponins it shows promising therapeutic effects. Anti-diabetic, Anti-dyslipidemic activity, Immunomodulatory effect, Anti-oxidant activity, Anti-inflammatory activity and Anti-cancer activity are the major medicinal properties of the fenugreek. The liberal consumption of the fenugreek seeds is proved to be safe, and provide health beneficial effects through its rich fiber content and other bioactive components. In view of the therapeutic effects, it is considered as a natural and necessary ingredient of our daily diet.

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