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RESEARCH ARTICLE

SURVEY OF BIOLOGICAL ACTIVITY ON TRIGONELLAFOENUM GRAECUM LEAVES

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ABSTRACT

Natural products have been a major source of new drugs. Plants are used medicinally in different countries and are a source of many potent and powerful drugs. Medicinal plants are used by 80% of world population as the only available medicines especially in developing countries. Over the past twenty five years, interest in medicinal plants has grown enormously from the use of herbal products as nature cosmetics and for self-medication by the general public for their biological effects. Trigonellafoenum commonly known as Fenugreek used as a spice and the leaves are edible and used as vegetable in many part of India. Fenugreek seed is reported to have anti-diabetic, anti-cancer, anti-microbial, anti-parasitic, anti-fertility, lactation stimulant and hypocholesterolaemic effects. In Ayurveda, both fenugreek seeds and leaves are used to prepare extracts or power for medicinal use.

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INTRODUCTION

Medicinal plants have played an essential role in the development of human culture. Plants are directly used as medicines by a majority of cultures around the world. Many food crops have medicinal effects. The use of traditional medicine is widespread in India. Over the past twenty five years, interest in medicinal plants has grown enormously from the use of herbal products as nature cosmetics and for self-medication by the general public for their biological effects. According to WHO, more than 80% of the world's population relies on plant based herbal medicines for their primary health care needs. Trigonellafoenum commonly known as Fenugreek belongs to the family Fabacaea which is an annual, herbaceous and aromatic plant. The seeds of this plant are used as a spice and the leaves are edible and used as vegetable in many part of India. Fenugreek seed is reported to have anti-diabetic, anti-cancer, anti-microbial, anti-parasitic, anti-fertility, antioxidant, lactation stimulant and hypocholesterolaemic effects. In Ayurveda, both fenugreek seeds and leaves are used to prepare extracts or power for medicinal use (Ramya Premanath, 2011). Fenugreek leaves have been shown to possess hypoglycaemic activity and are nontoxic and anti-inflammatory as well as antipyretic properties. It cures eye problem, stomach ulcers are cured. For diabetes it act as medicine, if it is takencontinuously for 40 days. It helps in digestion, brain nerves are activated. It is rich in phosphorus and calcium. It can be taken as sprouted also very well in balancing the hormones especially for women who suffer from hip pain and leg pain. A past of the fresh fenugreek leaves, applied on face prevents pimples, blackheads, dryness and early appearance of wrinkles. An infusion of the leaves is used as a gargle for mouth ulcer. Fenugreek leaves help in blood formation. They are good for preventing anemia and rundown conditions (Mullaicharam *et al*., 2013).

Scientific classification of Trigonellafoenumgraecum

Kingdom	:Plantae
Division	:Magnoloophyta
Class	:Magnoliopsida
Order	:Fabales
Family	:Fabacaea
Genus	:Trigonella
Species	:Trigonellafoenum

Vernacular name of Trigonellafoenumgraecum

Latin name	:Trigonellafoenumgraecum
Sanskrit	:Methika
French	:Fenugrec
Italian	:Fienogreco
Tamil	:Vendhayakeerai
Malayalam	:Uluva
Hindi	:Methi

Nutritional Values of Fenugreek

Fenugreek leaves (per 100g of edible portion) contain the following nutrients (Ramasastri, 1989):

Carbohydrates	:60g
Protein	:4.4g
Fat	:9g
Minerals	:1.5g
Calcium	:395mg
Phosphorus	:51mg
Iron	:1.93mg
Total energy	:49kcal

Related work: In the past, different researchers discussed various biological activities relevant to Trigonellafoenumgraecum (Fenugreek).

Anti-diabetic potential of Fenugreek: Anti-diabetic potential of Fenugreek may increase the number of insulin receptors in red blood cells and improve glucose utilization in peripheral tissues, thus demonstrating potential anti-diabetes effects both in the pancreas and other sites. The amino acid 4-hydroxyisoleucine, contained in the seeds also directly stimulates insulin secretion. Therefore conclude that 4-hydroxyisoleucine insulin tropic activity might at least in part, account for fenugreek seeds anti-diabetic properties (Mullaicharam *et al*., 2013).

Anti-nociceptive effects: There are some reports concerning the anti-nociceptive effects of the plant Trigonellafoenumgraecum in Indian traditional medicine. Because of the side effects of non-steroidal anti-inflammatory and anti-nociceptive drugs, and in search for more potent and less harmful compounds, study of the anti-nociceptive effects of Trigonellafoenumgraecum leaves by using tail-flick and formalin tests were carried out. The extract produced significant increase in the tail-flick latency. Hence conclude that the extract of Trigonellafoenumgraecum leaves produces anti-nociceptive effects through central and peripheral mechanisms (Mullaicharam *et al*., 2013).

Anti-plasmodial activity: Developing countries, where malaria is one of the most prevalent disease, still really on traditional medicine as a source for the treatment of this disease. The active principle was extracted out in different solvent systems to assess the anti-plasmodial potential, with an aim that they can further be utilized to formulate drugs. In vitro anti-plasmodial assay of the extracted fractions of fenugreek leaves was carried out using laboratory adapted chlorquine sensitive and resistant plasmodium falciparum isolates. Schizont maturation inhibition assay was adopted to analyze the anti-plasmodial potential of the extracts (Mullaicharam *et al*., 2013).

Phytochemicals in Trigonellafoenumgraecum: Green leafy vegetables are immense source of phytochemicals, which are interesting sources of dietary fibers. Trigonellafoenumgraecum have considerable amount of flavonoids, alkaloids, saponins, quinines, terpenoids, sterols, phenol, and tannins. On the contrary some of the biochemical constituents like carbohydrates, proteins, carotenoids, and chlorophyll in which revealed its most significant presence (Srinivasan *et al*., 2014).

Anti-fungal activity: Fenugreek has been reported since ancient times to have antifungal activity against various dermatophytes. The three dermatophytes differed significantly with regards to their susceptibility to the particular plant extract respectively. Trigonellafoenum can be used to treat the infections against the dermatophytes. It can be incorporated in various ointments, gels, solutions, creams to treat mycosis or dermatophytosis (Gandhi, 2006).

Conclusion

In real-life environment, Medicinal plants are used 80% of the world population as only the available medicines. In this paper, Fenugreek leaves have been shown to possess hypoglycaemic activity for diabetes it act as medicine, if it is taken continuously for 40 days. We discussed how Trigonellafoenumgraecum have considerable amount of phytochemicals like flavonoids, alkaloids, saponins, quinines, terpenoids, sterols, phenol, etc. and we also outline the nutritional values of fenugreek. We review the anti-plasmodial and anti-fungal activity which can be incorporated in various ointments, gels, solutions, creams to treat mycosis or dermatophytosis. We also study the anti-nociceptive effects of Trigonellafoenumgraecum leaves. Hence Fenugreek is reported to have anti-diabetic, anti-cancer, anti-microbial, anti-parasitic, anti-fertility, antioxidant, and lactation stimulant and hypocholesterolaemic effects.

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