Original Article
ISSN (Online): 2582-7472

ShodhKosh: Journal of Visual and Performing Arts
June 2024 5(6), 3719–3723

IMPACT OF FENUGREEK SEED POWDER SUPPEMENTATION AMONG DIABETIC PATIENTS

Sharda Kusumlatta Prabhulal [1], Dr. Hemlatta J. Patel [2]

[1] Ph.D. Research Scholar, Hemachandracharya North Gujarat University, Patan, India
[2] Hemachandracharya North Gujarat University, Patan, India

DOI
10.29121/shodhkosh.v5.i6.2024.6506

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

ABSTRACT

Fenugreek seeds or methi seeds are an annual herb and are used both as a spice and as a medicine. Fenugreek seeds are one of the common ingredients in many traditional cuisines. The benefits of fenugreek are widely studied. This herb has many positive effects on overall health if included in the diet regularly. Fenugreek is one of the oldest remedial plants, native to Central and Southeast Asia, especially India. However, it is also cultivated in North Africa, Mediterranean regions, and the US. Regular intake of fenugreek seed in any form leads to good health. It is used for the treatment of so many disease conditions like Diabetes, Heart diseases, skin, hair, and stomach problems. It has a potential to control blood sugar and cholesterol level effectively. Present study was planned for the study of impact of fenugreek seed powder as a supplementation. For the study, case study approach was applied. For that total, 30 diabetic respondents were selected purposively. Before and after supplementation, blood sugar was analyses at laboratory. The study concluded that fenugreek has a positive impact on the reduction and control of blood sugar level among diabetic patients.

Keywords: Fenugreek Seed, Diabetic

1. INTRODUCTION

Fenugreek (Trigonella foenum- graecum) is an aromatic herb that used as a spice a flavoring agent. Fenugreek is an annual herb that belongs to the Fabaceae family, the same family as soy. The fresh and dried seeds of this plant have been used as a spice and flavoring agent for ages. India accounts for its major production throughout the world, with 80% output coming directly from Rajasthan. Fenugreek has been shown to have various therapeutic properties, including anti-diabetic, anti-obesity, anti-inflammatory, anti-hyperlipidemic, antioxidant, anti-microbial, and anti-cancer activities (M. Bahmani, et al. 2016 & M. Ranade, N. Mudgalkar 2017). It may help in diabetes management, reduce cholesterol level, support weight loss and also help to treat the skin and hair problems. People with diabetes and a high cholesterol level may consume daily it as recommended by doctor. Fenugreek can boost testosterone levels. The hormone plays a vital role in many bodily functions in males. Fight Inflammation and reduce Aluminum Toxicity. Different dosages are used in clinical studies and treatments. These depend on the needs of the patient. Excessive consumption of fenugreek may lead to diarrhea, allergic reactions, or a sudden drop in blood glucose levels.

2. REVIEW OF LITERATURE

Neelakantan, et al. (2014) conducted a meta-analysis which included ten clinical trials and showed that fenugreek seeds had beneficial effects on glycemic control in diabetic patients.

Smith, et al. (2014) reviewed the research findings relevant to the use of dietary supplements lowering blood glucose, and found that the strongest research evidence was associated with alpha-lipoic acid and fenugreek

Gaddam, et al. (2015) reported a 3-year randomized, controlled, parallel clinical study which included pre-diabetic individuals. Sixty-six individuals were treated with fenugreek powder, 5 g twice a day before meals, and seventy-four individuals served as controls. Treatment was associated with considerable lowering of fasting plasma glucose, postprandial plasma glucose, and low-density lipoprotein cholesterol, and marked increase in serum insulin. Controls had 4.2 times higher chance of developing diabetes compared to treated individuals. Treatment was not associated with adverse effects and the benefi cial effect was attributed to reduction of insulin resistance.

Verma, et al. (2016) reported a placebo-controlled clinical study which included 154 patients with type 2 diabetes. 90day treatment with Fenugreek extract, furostanolic saponins (Fenfuro) 500 mg twice daily was associated with marked lowering of fasting plasma and post-prandial blood sugar levels. More than 80 % of the treated patients experienced reductions in fasting plasma sugar levels compared to 62 % of patients who received placebo. 89% of the treated patients experienced a decrease in post-prandial plasma sugar levels compared to 72 % of patients who received placebo. 48.8 % of the treated patients reported lowering of anti-diabetic therapy dosage, while 18.05 % of the patients who received placebo reported lowering of anti-diabetic therapy dosage. Treatment was not associated with adverse effects.

Geberemeskel, et al. (2019) reported a study which included 114 newly diagnosed uncomplicated type II diabetic patients. 57 patients received 25 g fenugreek seed powder solution orally twice a day for one month, and 57 patients received metformin. The study showed that fenugreek had marked effects in improving lipid metabolism in type II diabetes without the occurrence of adverse effects.

Hadi, et al. (2020) reported an 8-week controlled clinical study which included 50 patients with type 2 diabetes who were treated with anti-diabetic drugs. The patients received either 5 g fenugreek seed powder, three times daily or served as control patients. Compared to the control patients, treated patients experienced a considerable lowering of fasting plasma glucose ($p = 0.024$).

2.1. DOSAGE

Different dosages are used in clinical studies and treatments. These People with high cholesterol can take 10 to 30 grams of the seeds/powder three times a day, with meals. Lactating mothers who wish to increase their milk production should aim for 500 to 1000 mg of fenugreek a day. People with type 2 diabetes should consider taking 2.5 to 15 grams of the seeds daily. Men who want to increase their testosterone levels can opt for 500 to 600 mg of fenugreek daily.

3. METHODOLOGY

For the present study, 30 diabetic female respondents were selected purposively. 10 g of fenugreek seed powder was the daily supplementation dose given to diabetic females. Everyday Fenugreek seed powder were consumed by diabetic females at fix time that is in the morning for the period of 30 days. Before and after supplementation, blood sugar was analyzed at pathological laboratory. Glyco hemoglobib i.e. HbA1C analyzed with HPLC and plasma glucose was analyzed with photometric hexokinase at laboratory. Anthropometric measurements data were collected for the Body Mass Index analysis. Suitable stastical analysis were applied for testing significance.

4. RESULTS AND DISCUSSION

Present study was aimed with supplementation fenugreek seeds to diabetic females of 40 to 60 years. All the collected data presented as below including age, duration of diabetes, BMI, types of diet and awareness regarding diabetes.

Table 1 Age of Selected Diabetic Women.

Age in years	Frequency (F)	Percentage (%)
41-50	18	60
51-60	12	40

Table 1 depicts the data regarding age among selected females. In the study, 60 % women were in the age group of 41-50 years. 40 % women were in the age group of 51-60 years.

Table 2 Types of Diet Among Women.

Diet type	Frequency (F)	Percentage (%)
Vegetarian	18	60
Non vegetarian	12	40

Table 2 shows the data regarding types of diet consumed by selected women. Data shows that 60 % consumed vegetarian diet and 40 % women consumed non vegetarian diet. Majority i.e. 60 % diabetic women consumed vegetarian diet.

Table 3 BMI Classification of Selected Women.

BMI classification	Frequency (F)	Percentage (%)
<18.5	--	--
18.5 -24.9	19	63.33
≥25	06	20.00
25-29.9	05	16.67

Table 3 depicts the data regarding BMI classification of diabetic females. In the study, 63.33 % diabetic females had normal BMI. 20 % had BMI > 25 and 16.67 % females had 25- 29.9 BMI which is a obese condition and it leads to a malnutrition condition. Majority of i.e. 63.33 % diabetic females had normal BMI.

Table 4 Impact of Fenugreek Supplementation on Blood Parameters.

Impacts	F	%
Reduces blood glucose level	30	100
No constipation	30	100
Weight loss	8	26.67

Table 4 depicts the data regarding impact of fenugreek seed supplementation on various parameters. In the study, 100 % diabetic females reduce blood sugar level. 100 % diabetic females had no constipation and 26.67 % had weight loss due to fenugreek seeds consumption. All the selected diabetic females reduced blood sugar level and no constipation.

't' analysis of intervention.

Ho1: There will be no significant impact of fenugreek seed powder supplementation on fasting blood sugar among Diabetic male and female.

Table 5 't' Analysis of Fasting Sugar

Group (fasting sugar)	Mean	S. D	N	Cal T	Tab T	Level of significance
Initial – after 15 days	124-120	8.09-7.85	30-30	2.04	2.042	Sig. at p<0.05
After 15 – after 30 days	120-110	7.85-7.68	30-30	2.07	2.042	Sig. at p<0.05
Initial – after 30 days	124-110	8.09-7.68	30-30	4.10	2.042	Sig. at p<0.05

A fasting blood sugar test measures sugar (glucose) in blood. It's a simple and common way to screen for prediabetes, diabetes or gestational diabetes. Females were instructed that don't eat or drink anything (except water) for eight to 12 hours before the test. Fasting blood sugar is a simple, common blood test to screen for diabetes, prediabetes or gestational diabetes (during pregnancy). It's also called a fasting blood glucose test. In the present study, fasting blood sugar level was analyzed at different intervals. Difference observed in Initial and 15-day interval in the fasting blood sugar level range was 124-120 mg /dl and it was statistically significant at $p < 0.05$ level. Between 15 day

and 30 days interval in the fasting blood sugar level range was 120 – 110 mg/dl and it was statistically significant at $p<0.05$ level. Initial and 30-day interval in the fasting blood sugar level range was 124-110 mg/dl and it was statistically significant at $p < 0.01$ level. So, the study concluded that there was a positive impact of fenugreek powder supplementation on fasting blood sugar level among selected diabetic male and female.

Ho2: There will be no significant impact of fenugreek seed powder supplementation on fasting blood sugar among Diabetic male and female.

Table 6 't' Analysis of Post Prandial Blood Sugar

Group (post prandial)	Mean	S. D	N	Cal T	Tab T	Level of significance
Initial – after 15 days	170-165	17.18-16.86	30-30	1.30	2.042	NS
After 15 – after 30 days	165-138	16.86-19.07	30-30	1.28	2.042	NS
Initial – after 30 days	170-138	17.18-19.07	30-30	2.49	2.042	Sig. at $p<0.05$

Postprandial blood sugar (PPBS), or blood glucose level postprandial, refers to the concentration of glucose in the blood after consuming a meal. This metric is vital for understanding how the body metabolizes carbohydrates and sugars ingested through food. It is especially important for diabetic people or those at risk of developing diabetes, as it provides insight into how their body processes sugar. The blood sugar PP test (or simply the PPBS test) is crucial in managing diabetes and preventing complications associated with abnormal blood sugar levels. Regularly tracking post-prandial glucose can help maintain overall health and make informed dietary and lifestyle decisions. Difference observed in Initial and 15-day interval in the fasting blood sugar level range was 170-165 mg/dl and it was not statistically significant. Between 15 day and 30 days interval in the fasting blood sugar level range was 165-138 mg/dl and it was statistically non-significant. Initial and 30-day interval in the fasting blood sugar level range was 170-138 mg/dl, and it was statistically significant at $p<0.05$ level. So, the study concluded that there was a positive impact of fenugreek powder supplementation for one month duration on post prandial blood sugar level among selected diabetic male and female.

5. CONCLUSION

Fenugreek seeds powder supplementation may help stabilize blood sugar level. Regular consumption may also improve cholesterol levels, solves digestive problems and inflammation also. Fenugreek water also helping out the body's harmful toxin removal. Overall, it definately lowers the blood sugar level and also improves health and keep body in a non - toxic eco system.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

REFERENCES

Anti-heartburn effects of a…Phyto therapy Research, US National Library of Medicine.
Anti-inflammatory activity of…Indian Journal of Pharmacology, US National Library of Medicine.
Chemical composition and antifungal…" Research Gate.
Effect of cream formulation of…" Tropical Journal of Pharmaceutical Research.
Effect of fenugreek on total body…" Pharmacology Online.
Effectiveness of fenugreek as a…" Phytotherapy Research, US National Library of Medicine.
Evaluation of fenugreek…" Iranian Journal of Pharmaceutical Research, US National Library of Medicine.
Fennel and fenugreek…" Clinical Nutrition Research, US National Library of Medicine.
Fenugreek seeds reduce… Nutrition Research and Practice, US National Library of Medicine.
Fenugreek seeds, a…BMC Veterinary Research

Fenugreek" University of Michigan.
Fenugreek+micronutrients…" Research Gate.
Gaddam A, Galla C, Thummisetti S, Marikanty RK, Palanisamy UD, et al. (2015) Role of Fenugreek in the prevention of type 2 diabetes mellitus in prediabetes. J Diabetes Metab Disord 14: 74. Link: https://bit.ly/3fJYJed
Geberemeskel GA, Debebe YG, Nguse NA (2019) Antidiabetic Effect of Fenugreek Seed Powder Solution (Trigonella foenum-graecum L.) on Hyperlipidemia in Diabetic Patients. J Diabetes Res 2019: 8507453. Link: https://bit.ly/3jvh8wo 31. Hadi A, Arab A, Hajianfar H, Talaei B, Miraghajani M, et al. (2020) The effect of fenugreek seed supplementation on serum irisin levels, blood pressure, and liver and kidney function in patients with type 2 diabetes mellitus: A parallel randomized clinical trial. Complement Ther Med 49: 102315. Link: https://bit.ly/3s2DZmG
Health Benefits of Fenugreek. WebMD.
https://www.narayanahealth.org/blog/health-benefits-of-fenugreek-seeds/
Investigating the effectiveness of the Trigonella foenum-graecum L. (fenugreek) seeds in mild asthma: a randomized controlled trial" National Center for Biotechnology Information
M. Bahmani, et al.(2016) A review on ethnobotanical and therapeutic uses of fenugreek (Trigonella foenum-graceum L). Journal of evidence-based complementary & alternative medicine. 21 (1) (2016), pp. 53-62. View at publisher. CrossrefView in ScopusGoogle Scholar
M. Ranade, N. Mudgalkar (2017). A simple dietary addition of fenugreek seed leads to the reduction in blood glucose levels: a parallel group, randomized single-blind trial. Ayu 38 (1–2) (2017), p. 24. CrossrefGoogle Scholar
Neelakantan N, Narayanan M, de Souza RJ, van Dam RM (2014) Effect of fenugreek (Trigonella foenum-graecum L.) intake on glycemia: a meta analysis of clinical trials. Nutr J 13: 7. Link: https://bit.ly/2VGU5pX
Role of fenugreek in the prevention of…Journal of Diabetes & Metabolic Disorders, US National Library of Medicine, National Institutes of Health.
Role of fenugreek in the prevention…" Journal of Diabetes & Metabolic Disorders, US National Library of Medicine.
Salicylates in foods" Journal of the American Dietetic Association, Semantic Scholar.
Smith JD, Clinard VB (2003) Natural products for the management of type 2 diabetes mellitus and co morbid conditions. J Am Pharm. Assoc 54: e304-e318. Link: https://bit.ly/3lKIWQ7
Spices, Fenugreek Seeds, USDA Food Data Central
Steroid saponins from fenugreek seeds…Steroids, US National Library of Medicine.
Substantial Effect of Fenugreek Seeds, Oman Medical Journal, US National Library of Medicine
The efficacy study of…" US National Library of Medicine.
The health benefits of trigonella…" Rameesh Institute of Voc & Tech Education.
The most useful medicinal herbs…" Biomedical Research and Therapy.
Verma N, Usman K, Patel N, Dhakre S, Jain A, et al. (2016) A multicenter clinical study to determine the efficacy of a novel fenugreek seed (Trigonella foenum - graecum) extract (Fenfuro™) in patients with type 2 diabetes. Food Nutr. Res 60: 32382. Link: https://bit.ly/3xsqga9
Wonders of leafy species…" Academia.