

Evaluation of Therapeutic Effect of Germinated Fenugreek Seed Flour (GFSF) on Diabetic Subjects

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Abstract:-

Supplementation study was carried out for 60 days to assess the impact of germinated fenugreek seed flour on type 2 diabetes subjects. Perusal of data showed that intake of different doses (20g and 30g/d) of germinated fenugreek seed flour had effect in reduction from the signs and symptoms of diabetes after 60 days. It was also evident from the study that the study subjects wanted to continue this supplement on their own after the study.

Key words:

Germinated, Diabetes, Fenugreek, Supplementation.

Introduction

Prevalence of type 2 diabetes in India is on the rise and literally it can be said that India is facing a diabetic explosion. The exact causes of the same are unknown. The curious points in diabetes sufferers of India are incidence of diabetes happens to occur at an early age and mostly males are affected (Mitra, 2007).

The hypoglycemic effects of fenugreek seeds have been attributed to

several mechanisms. *In vitro* the amino acid 4-hydroxyisoleucine in fenugreek seeds increased glucose – induced insulin release in human and rat pancreatic islet cells (Sauvaire *et al.*, 1998). This amino acid appeared to act only on pancreatic beta cells. Various human studies showed that, fenugreek reduced the area under the plasma glucose curve and increased the number of insulin receptors, although the mechanism for this effect is unclear (Raghuram *et al.*, 1994). In humans, fenugreek seeds exert hypoglycemic effects by stimulating glucose – dependent insulin secretion from pancreatic beta –cells, as well as by inhibiting the activities of alpha amylase and sucrase, two intestinal enzymes involved in carbohydrate metabolism. Fenugreek seeds also lower serum triglycerides, total cholesterol (TC), and low-density lipoprotein cholesterol (LDL-C). These effects may be due to saponin, which increase biliary cholesterol excretion, in turn leading to lowered serum cholesterol levels. This plant is scientifically tested for its well-known ability in traditional medicine to act as a substitute for insulin among diabetic patients (Azad, 2009).

Impact of Germinated Fenugreek Seed Flour (GFSF) intake on diabetic subjects for 60 days

Total (50) type 2 diabetic subjects were selected and were divided into 5 groups. Group I (n=10) was given 20 g GFSF and were directed to eat twice a day with *chapatti*. Group II (n=10) was given 20 g GFSF and were requested to take it four times a day with water. Similarly group III (n=10) was given 30 g GFSF to take twice a day with *chapatti* and group IV (n=10) 30 g GFSF to take four times a day with water. Control group (n=10) was not provided with any supplements. Experimental as well as control subjects were asked to continue their medications during study period. Fenugreek is a natural designer food with major therapeutic benefits if consumed regularly. It is an ideal food for management of diabetes mellitus. The impact of supplementation for 60 days on diabetic subjects revealed interesting results.

Effect of GFSF intake on alleviation of signs and symptoms of diabetes

Effect of GFSF intake on the reduction of signs and symptoms of diabetes was evaluated by post survey proforma and also by analysis of biochemical parameters like blood glucose and lipid profile at baseline and after study period of 60 days. The post survey proforma was filled up after every fifteen days for total 60 days. The information was collected on following attributes to see the effect of GFSF.

Supplement found to be effective / ineffective

Data presented in Table 1 showed that 25 per cent experimental subjects found this supplement satisfactory, 17.5 per cent found it effective and 57.5 per cent did not found it effective after fifteen days of supplementation. After 30 days 30 per cent subjects found it satisfactory, 30 per cent effective while 40 per cent still found it ineffective. After 45 days, 45 per cent subjects found supplement satisfactory, 37.5 per cent effective and 17.5 per cent ineffective. At the end, (after 60 days) majority of the subjects (55%) found supplement satisfactory and 45 per cent found effective. Thus it was evident that as time duration increased diabetics found it helpful in management of disease.

Found relief from disease

Data pertaining to relief experienced by subjects from diabetes showed that the germinated fenugreek seed flour (GFSF) intake did not provide any relief to 57.5 per cent subjects during first fifteen days. While 25 per cent subjects got slight relief and 17.5 per cent experienced gross relief after 15th day of study. Consecutively after 30 days, 45 per cent subjects experienced slight relief whereas 27.5 per cent found gross relief and 27.5 per cent did not get any relief. After 45 days period 50 per cent subjects found slight relief, 35 per cent experienced gross relief while 15 per cent subjects did not found any relief still. At the end (after 60 days) majority of subjects (62.5 per cent) found slight relief and 37.5 per cent experienced gross relief (Table -1).

Reduction in the frequency of taking medicines

Perusal of data presented in Table - 1 revealed that no subject reduced the frequency of taking medicines after 15 and 30 days intake. But after 45 and 60 days it was found that 5 per cent and 10 per cent subjects reduce the medicine intake, respectively. While subjects were strictly asked not to quit medicine during study period. When asked for the reason behind this, it was narrated by one of the subject that they wanted to try if this supplement alone could control their blood glucose and they may get rid off medicine.

Other benefits

Data indicated that 12.5 per cent, 17.5 per cent 37.5 per cent and 37.5 per cent subjects experienced some other beneficial effect of using GFSF after 15days, 30 days, 45 days and 60 days, respectively. As told by subjects this health supplement was helpful in the management of constipation. While 87.5 per cent after 15 days, 82.5 per cent after 30 days, 62.5 per cent after 45 days and again 62.5 per cent after 60 days did not experienced any such benefits of using supplement (Table -1).

Like to continue on its own

Data showed that only 25 per cent of subjects wanted to continue this supplement on its own after the study period and majority (75%) denied continuing on its own. They asked if this supplement is available in market they would like to purchase from there (Table - 1).

Any side effects

No side effect was experienced by the experimental subjects till the end of the

study period of 60 days. Thus it was observed that GFSF is safe at the level of 20 g and 30 g per day to be used in the management of diabetes.

Discussion

Various studies on fenugreek reveals no reports of clinically significant harmful adverse effects. Although fenugreek has traditionally been considered safe and well tolerated, some side effects have been associated with its use. Caution in using fenugreek is warranted in patients known to be allergic to it or who are allergic to chickpeas because of possible cross-reactivity (**Patil et al. 1997**). Fenugreek contained in curry powder was found to be an allergen in a patient who reported severe bronchospasm, wheezing, and diarrhea. Other reported side effects include transient diarrhea and flatulence, and dizziness. Hypoglycemia is an expected effect; therefore, care should be taken to monitor blood glucose levels when beginning supplementation (**Abdel-Barry et al. 2000**). Decreased body weight has also been reported and attributed to decreases in T3. Because fenugreek preparations can contain coumarin derivatives, there is a theoretical risk prothrombin time (PT) or the international normalized ratio (INR) might be increased, which, in turn, increases the risk of bleeding (**Panda et al. 1999**). Fenugreek should not be used during pregnancy because of its potential uterine stimulating properties observed in early animal studies (**Lambert and Cormier, 2001**).

Table.1 Effect of GFSF intake on diabetic subjects (n=40) during and after 60 days of the study

Particulars	1 st Fifteen days	2 nd Fifteen days	3 rd Fifteen days	4 th Fifteen days
Found supplement effective				
Satisfactory	10 (25)	12 (30)	18 (45)	22 (55)
Effective	7 (17.5)	12 (30)	15 (37.5)	18 (45)
Ineffective	23 (57.5)	16 (40)	7 (17.5)	-
Relief from signs and symptoms of diabetes				
Grossly	7 (17.5)	11 (27.5)	14 (35)	15 (37.5)
Slightly	10 (25)	18 (45)	20 (50)	25 (62.5)
No	23 (57.5)	11 (27.5)	6 (15)	-
Reduction in the frequency of taking medicines				
Yes	-	-	2 (5)	4 (10)
No	40 (100)	40 (100)	38 (95)	36 (90)
Other benefits				
Yes	5 (12.5)	7 (17.5)	15 (37.5)	15 (37.5)
No	35 (87.5)	33 (82.5)	25 (62.5)	25 (62.5)
Would like to continue on its own				
Yes	-	-	-	10 (25)
No	-	-	-	30 (75)
Any side effects after using supplement				
Yes	-	-	-	-
No	40 (100)	40 (100)	40 (100)	40 (100)

*Values in parentheses indicate per cent.

Conclusion

Effect of taking germinated fenugreek seed flour on reduction of sign and symptoms of diabetes was evaluated in this study. Hypoglycemic effect of germinated fenugreek seed flour was analyzed and it was found that intake of different doses (20 g and 30 g) of germinated fenugreek seed flour showed reduction in sign and symptoms of diabetes.

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