TO INVESTIGATE THE EFFECT OF SPROUTED FENUGREEK SEED CONSUMPTION TO CONTROL BLOOD SUGAR LEVELS IN NEWLY DIAGNOSED DIABETIC PATIENTS AGED 25-35YEARS

Kusuma Neela Bolla Assistant Professor, Department of Food Science and Technology, Sri Durga Malleswara Siddhartha Mahila Kalasala, Vijayawada (Affiliated to Krishna University, Machillipatnam)

Naga Raju Borra, Assistant Professor, Department of Pathology, GEMS Medical College and Hospital, Srikakulum (Affiliated to Dr.NTR Health University, Vijayawada)

Harika Allemsetty, Assistant Professor, Department of Biochemistry, Sri Durga Malleswara Siddhartha Mahila Kalasala, Vijayawada. (Affiliated to Krishna University, Machillipatnam)

Pallavi Atumuri, Assistant Professor, Department of Biochemistry, Sri Durga Malleswara Siddhartha Mahila Kalasala, Vijayawada. (Affiliated to Krishna University, Machillipatnam)

Abstract:

Diabetes Mellitus is one of the chronic metabolic disorder can be regulated by the modification of lifestyle, dietary habits and addition of physical activity. Fenugreek having antidiabetic, anti inflammatory and antioxidant property which acts as the functional food for diabetic subjects, so our present study was designed in such a way to investigate the effect of sprouted fenugreek on newly diagnosed diabetic subjects to control their blood sugar levels. For this study we selected 150 newly diagnosed diabetic subjects without any complications aged 25-35 years. They are randomly stratified into two groups as treatment and control group. For total participants advised nutrition guidelines and physical activity importance and for treatment group we guided them to consume 25gms of sprouted fenugreek seeds in additional to their diet in the early morning. Our results relieved that the treatment group showed a significant change ($p<0.05$) in both fasting and post prandial blood sugar levels when compared with the control group.

Key words: Diabetes mellitus, Fenugreek seeds, FBS, PPBS, Anti oxidant.

Introduction

Diabetes mellitus is one of the major metabolic disorders associated with deficiency in insulin secretion or by inadequate insulin secretion or by inadequate insulin secretion to combat for the resistance

DM is categorised into type 1 and type 2 mellitus. In which type1 DM is insulin dependent diabetes while type2 DM is non - insulin dependent or adult onset diabetes . It accounts or 90-95% of diagnosed cases of diabetes.

TYPE 2 DM is recognised for various complications such as nephropathy, retinopathy, neuropathy, cardiovascular risk. the aim of type 2 diabetes subject are to maintain normal blood glucose and improve quality of life to lead regular happy smooth life . In order to manage diabetes appropriate diet control, lifestyle along with many oral diabetes medications at initial stage of diabetes are advised.

Management of DM is difficult with the drugs as they cause many side- effects and have some limitations. Thus as an alternative, there is an immense interest in medicinal or herbal plants for management of DM with indigenous, inexpensive, food based treatment. Scientist

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have started looking into the herbal extracts to observe their effective and protective role in the diabetic animal and human models. One of such herbal plants in fenugreek having scientific name of trigonella foenum-graceum. the present work demonstrates a significant role of sprouted fenugreek seeds in reducing blood glucose levels, body mass index, the pulse rate, blood pressure and reduction of weight in type 2 diabetic patients or in metabolic disorder.

Fenugreek seeds increase the insulin sensitivity through the activation insulin signalling at an early stage in peripheral tissues and liver . the effects is brought by liver and lipid metabolism with up-regulation of certain enzymes and increase in the glycogen synthesis in the muscle and the liver.in addition, fenugreek enhances the peroxisome proliferator activated receptor-ϒ(PPAR ϒ) and promotes adipocyte differentiation and size reduction.

In the history of Ayurveda , herbal plant are rich source of pharmacological active compounds and hence medical property they were using as a source to alleviate or cure chronic illness such as diabetes, hypolipidemic, anti arthritic ,Cardio vascular diseases, cancer, antibacterial etc.

Fenugreek is an annual crop and biological named as Trigonella foenum, apart from the flavouring properties of its seeds, it has been able to mark its presence in ayurvedic system of medicine owing to its nutritional and therapeutic benefits. These seeds are rich source of Fibers, Protein, Vitamin A, Vitamin C, Iron and Calcium . along there it is good source of phytochemicals like phenols, flavonoid, alkaloids and tannins.

So it is highly recommended medicinal plant for treatment of various dye functions and disease. Many studies reported that fenugreek seeds are having excellent nutritional properties i.e antioxidants properties, antidiabetic, property, anticarcinogenic, hypocholesterolemic, and immunological booster and recommended as nutritional supplementation in the diet to reduce oxidative damage.

Sprouting shown to improve the nutritional profile of fenugreek seeds and decreases the fiber content such that it get digested, absorbed easily in the system. Germinated seeds have higher antioxidant content and enhance antidiabetic effect than its dry or boiled counterparts.

The effect of sprouting seeds make more nutritional and raise the number of its nutritional, therapeutic and pharmaceutical applications when compared to dried fenugreek seeds. Thus, the present study was designed to investigate the effect of sprouted Trigonella Foenum seeds consumption on blood glucose levels of newly diagnosis patients.

Methodology

Design of the study was carried out on 150 newly diagnosed diabetic patients. Study work was explained in detail to the selected subjects, importance of sprouted fenugreek consumption, dietary guidelines was also explained. Newly diagnosed patients enrolled in the study with their own interest. Questionnaire was developed to collect general information Anthropometric Data, Biochemical and Dietary Pattern of the selected participants.

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Study design and period

This clinical trial study was conducted to investigate the effect of sprouted fenugreek seed consumption of Blood Sugar levels on newly diagnosed Diabetic patients. This study was carried out for 45 days as a trial study.

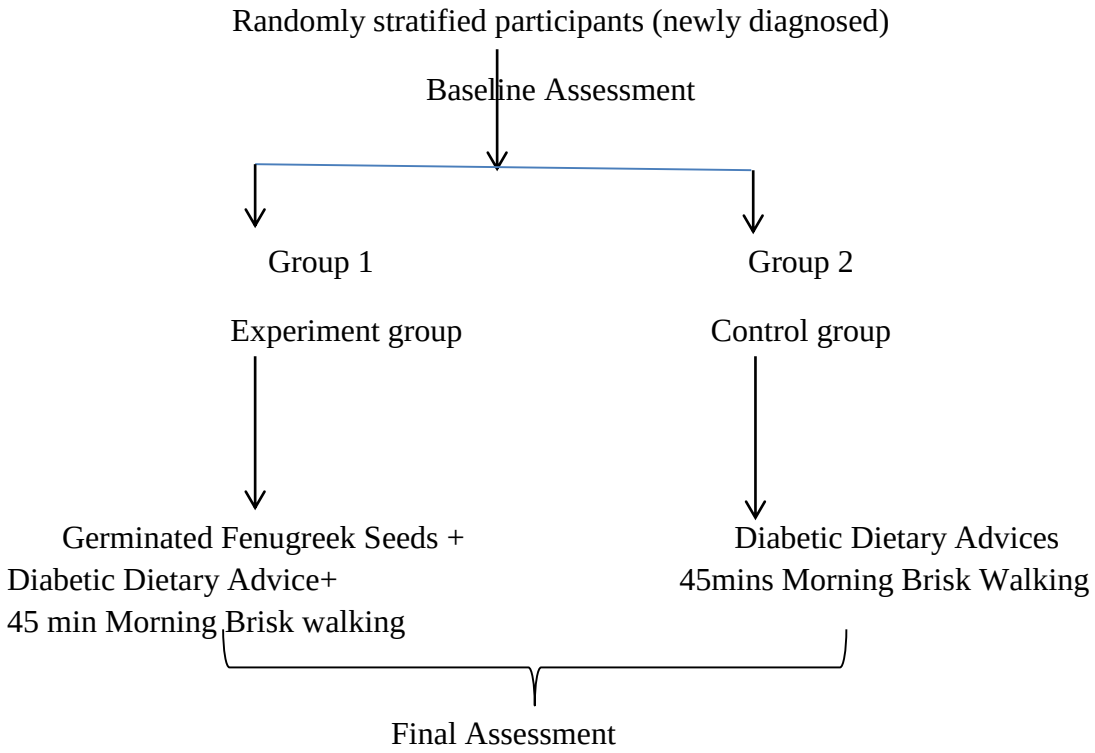

Fig no: 1 Research Design

Selection of participants:

Subjects who are newly diagnosed type 2 Diabetes Mellitus of 25 -35years candidates without having any complications and physiological conditions (pregnancy or lactation) were included to the study trial.

Assessment

Height in centimetres was measured and recorded a standard height metre when the participants was in an upright standing position without shows. Weight in kilograms was measured by using digital weighting scale and readings were recorded. Patients weight was noted with light weight cloths and no shoes. BMI was assessed by using the formula weight in kilograms divided by height in meters square. For all selected participants baseline and final assessment of Fasting blood sugar, Post prandial blood sugar, HB A1C were examined. At baseline, the usual dietary intake was recorded by using semi structured 24 hour recall questionnaire. Face to face interview was conducted to collect the food intake and pattern. By using food composition table, all foods and recipes was calculated to assess the intake of total nutrients.

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Result:

General information

Socio Demographic status				
Age	25-35 y		25-35y	
Gender				
Male	30	40%	32	42.60%
Female	45	60%	43	57.30%
Education Qualification				
10th	12	16%	16	21.30%
Inter	8	10.60%	10	13.30%
Degree	20	26.60%	18	24%
Pg	35	46.60%	31	41.30%
Lifestyle				
Sedentary	59	78.60%	55	73.30%
Moderate	14	18.60%	16	21.30%
Heavy	2	2.60%	4	5%

Table 1 shows the socio demographic data of the study participants. In this study around 60% of the study participants are female and 40-42% are male participants. 41.3 – 46.6% of the total participants are postgraduates and around 78.6% of the participants are belong to sedentary lifestyle.

Table 2 Anthropometric data

	Group 1	Group 2
Height	157±6.02	168±8.26
Weight	70.5±11.8	78.5±5.9
BMI	28.59±2.69	27.25±2.56

Table 2 represent the Anthropometric Measurements of the study participants was recorded, table clearly showed that the total participants were at overweight categories (25-29.9 kg/m^2) of Body mass index as per the WHO recommendations.

Table 3 Comparison of Initial and Final Values Of Blood Sugar Levels Of The Both Participants

	Group 1			Group 2		
	Initial	Final	p value	Initial	Final	p value
FBS	120.5±20.7	97±16.7	0.052	124.5±25.7	120±22.6	0.19
PPBS	154.2±30.11	128.4±28.8	0.042	158.5±27.4	157.11±25.72	0.18
HB A1C	7.2±3.11	6.9±1.95	0.035	7.4±2.89	7.3±3.1	0.129

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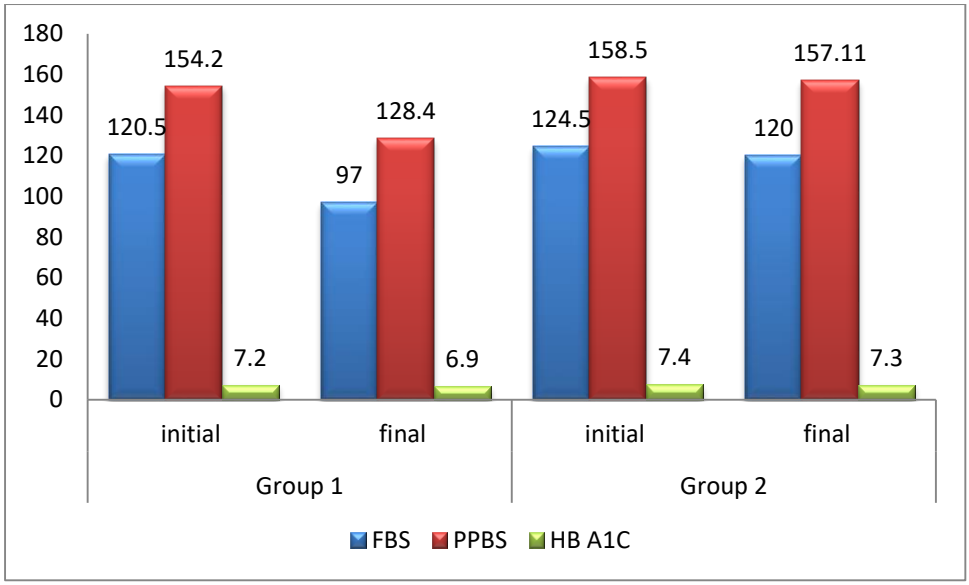

Table 3 represents the baseline and final values of the blood sugar levels of the study participants. The treatment group was continuously consumed 15grams of sprouted fenugreek seeds along with their regular diabetic dietary pattern for consecutive days, results showed a statistical significant decreased in the both fasting (120.5±20.7 to 97±16.7) and PPBS (154.2±30.11 to 128.4±28.8) respectively. However, the control group which had not received sprouted fenugreek seeds doesn't showed a significant changes in the booth FBS & PPBS levels.

Discussion

Diabetes mellitus is one of the metabolic disorder with high prevalence in the worldwide and it is a major cause of morbidity and mortality. Diabetes is non curable but controllable disorder. Diabetes mellitus can be managed with synthetic drugs, but they may cause side effects and have some limitations too. On another procedure to control these metabolic defects by applying few modifications in diet changing lifestyle, increase physical activity, decrease smoking and alcohol consumption had shown lower the symptoms of DM_2 and metabolic disorder. In addition, sprouted fenugreek seeds in the diet and with moderate physical activity like brisk walking had a significant change in blood sugar levels. In the present study, administration of 15grams of germinated fenugreek seeds in newly diagnosed prediabetic subjects showed a significant reduction ($p<0.05$) in the both fasting and post prandial blood sugar levels. When compared with the non consuming group. Anti hyperglycemic effect of the germinated fenugreek seeds reduced the blood sugar levels, Bioactive compound in the sprouted fenugreek seeds interferes with the stimulations of insulin from β cells and improves insulin sensitivity towards the target sites. However the control group did not showed any much significance in the blood glucose levels. In the current study, the sprouted trigonella foenum seeds produced a significant changes in FBS, PPBS, HbA1C in newly diagnosed prediabetic subjects. They had an reduced metabolic defects due to given treatment of sprouted fenugreek seeds and with moderate physical activity than compared to the non consumers.

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Conclusions

This present investigation reveals that sprouted seeds are potent natural food source of phytochemical, anti hyperglycemic effect, antioxidant effect showed a significant to control the blood glucose level and their by reduce the metabolic defects, so that the addition of sprouted fenugreek seeds may act as good medical value for the clinical management of Diabetes mellitus.

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