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ABSTRACT

Nowadays diabetes is the most dreadful disease for humankind in the whole world. Indians are more centrally obese at a given level of body mass index (BMI) compared to white Caucasians and that Indians are more insulin resistant even at lower level of BMI so they are more prone to have diabetes. Consumption of cereal bran decreases the blood glucose level as its amount is inversely associated with insulin resistance.

A detailed clinical examination done on selected patients. The criteria for the selection are as follows: 1.All patients are sedentary middle aged workers. 2. Patients with complications like were not included 3.Patients selected were explained the outline and aim of the study. They were advised to have cereal bran in powdered form. 4. We made 3 groups. Group A fed 5 gm, group B fed 10 gm and group C fed 15 gm of cereal bran. 5. Patients are recalled after 2 weeks for the investigation to know the proper effect of cereal bran. 6. The investigations include Anthropometric data, GTT, blood glucose, and serum lipid profile. The test applied for clinical estimation of blood glucose is GOD-POD (glucose oxidase peroxiadase) method.

So, this study proves that consumption of cereal bran improves the blood glucose levels in the diabetic's patients.

Keywords:*Diabetes, Cereal bran, Polysaccharide etc*

INTRODUCTION

Diabetes Mellitus is a chronic disease that has affected humankind throughout the world. The life span of diabetics is shorter than that of non diabetics at nearly all ages. Diabetes has been defined as a genetically and clinically heterogeneous group of disorder all of which show glucose intolerance.[1.4, 5, 11]

Prevelance- Diabetes is on increase in India. The multicenter ICMR study showed a prevalence of 2.5 % in the urban and 1.8% in the rural population above the age of 15 years. One in every eight individuals in India is a Diabetic. There are 171 million people worldwide suffering from diabetes in 2000 according to World Health Organization (WHO) statistics and this number would be more than double by 2030 (WHO 2008). The disease is responsible for 3.2 million deaths every year (WHO 2008).

- Diabetes mellitus is characterized by high blood glucose level with typical manifestations of thirst, polyuria, polydipsia, and weight loss.
- It is caused by partial or total lack of insulin and alteration in carbohydrate, protein and fat metabolism that creates defects in insulin-mediated signal pathways, resulting in decreased glucose transportation from blood into muscle and fat cells.
- The major risk is vascular injury leading to heart disease, which is accelerated by increased lipid levels and hypertension. Management of diabetes includes: control of blood glucose level and lipids; and reduction of hypertension.

Cereals are grasses (members of the monocot family Poaceae, also known as Gramineae) cultivated for the edible components of their grain . Bran is the hard outer layer of grain and consists of combined aleurone and pericarp. Along with germ, it is an integral part of whole grains, and is often produced as a by-product of milling in the production of refined grains. When bran is removed from grains, the grains lose a portion of their nutritional value.

Bran is particularly rich in dietary fiber and essential fatty acids and contains significant quantities of starch, protein, vitamins and dietary minerals.

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Insoluble fiber increases the movement of material through digestive tract and increases the stool bulk. Sources of insoluble fibers are whole grain, bran, seeds and skin of fruits and vegetables. Insoluble fibers does not dissolve in water so it helps to prevent constipation and keep the digestive system healthy and lowers the risk of certain cancers.

Barley is a very good source of fiber and selenium. It also serves as a good source of the minerals phosphorous, copper and manganese. Eating barley may help your regularity, lower your LDL ("bad") cholesterol, provide intestinal protection, protect against cardiovascular risk factors, lower your risk of type 2 diabetes, help prevent gallstones, protect against childhood asthma, protect against cancer and heart disease, and reduce symptoms of rheumatoid arthritis. Barley is a "gluten grain," so you may want to avoid it if you have gluten sensitivities; however, many individuals with gluten sensitivities have experience no problems with barley. Store barley in a cool, dry place.

Whole wheat is a very good source of dietary fiber and manganese. It is also a good source of magnesium. Eating wheat may reduce the risk of metabolic syndrome, promote women's health, promote gastrointestinal health, lower the risk of type 2 diabetes, help prevent gallstones, prevent cancer and heart disease, and protect against childhood asthma. Wheat is a "gluten grain," so you may want to avoid it if you have gluten sensitivities; many individuals with gluten sensitivities experience significant problems with wheat. Choose sourdough for the best nutrition among commercially baked breads, suggests a study published in the journal Nutrition. Sourdough bread is also more easily tolerated by those with gluten sensitivities.

Comparison of Fiber Content in Some Major Food Grains :

Source	Total Fiber	Soluble Fiber	Insoluble Fiber	Protein	Fat
Soya Bean	20%	15 - 18%	3 - 5%	40 - 43%	19%
Oats	15 - 18%	7 - 8%	7 - 8%	14 - 19%	N/A
Wheat	12%	1 - 3%	9 - 11%	10 - 12%	1 - 3%

The WHO recommends that any diabetic should include 15-25 gram of beta glucans per day. [1,3]

METHODOLOGY

A detailed clinical examination was carried out and recorded. The criteria for the selection of patients are as follows:

- All patients are sedentary middle aged workers.
- Patients with complications were not included.
- Patients selected were explained the outline and aim of the study. They were given advice regarding the incorporation of fenugreek powder in their daily routine.
- We made three groups. Group A fed 5gm, group B fed 10 gm and group C fed 15 gm of cereal bran in the powdered form.
- Patients are recalled after 2 weeks for the base line investigation Anthropometric data, GTT (75 gm oral glucose tolerance test), blood glucose, and serum lipid profile to know the proper effect of cereal bran.

Clinical evaluations was done at periodic intervals and were repeated regularly as per to the protocol. The test applied for clinical estimation of blood glucose is GOD-POD method.

RESULT AND DISCUSSION

In this study 108 patients were studied for a period of one month. All these patients developed a sense of well being and showed significant fall in their glycolatedhemoglobin. In these patients there was significant decrease in the body weight and increase in lean body mass. Group A fed 5 gm, group B fed 10 gm and group C fed 15 gm of cereal bran in the powdered form.

Sn	Blood Glucose	Group A (fed 5 gm)	Group B (fed 10 gm)	Group C (fed 15 gm)
1.	Initial			
	Fasting	136	174	141
	Postprandial	196.4	194	217
2	2 weeks			
	Fasting	120	142	135
	Postprandial	184	194	198.3
3	4 weeks			
	Fasting	113.3	120	134
	Postprandial	190.5	178.3	162
4	6 weeks			
	Fasting	120.4	108	124.5
	Postprandial	192	164.7	158

From the study it is clear that small dose of cereal bran are not effective significantly. As in group A there is no significant difference in fasting and postprandial blood glucose but there is fall in blood glucose is seen in group B, whereas in group C there is mild decrease in blood glucose is observe.

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This study confirms that the amount of cereal bran is inversely proportional to the glucose resistance andfgfd support the hypothesis that diets with a low glycemic load and high insoluble fibers.

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