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Effect of Restricted Diet to Control Blood and Urine Sugar in Type-2 Diabetes mellitus - A Case Study

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ABSTRACT

In today's hectic schedule, people are suffering from stressful life and to achieve their goal they ignore their health by taking improper diet. Incidence rate of Diabetes Mellitus is increased. Recently diagnosed as Diabetes Mellitus Type 2 case, was put on restricted diet for continuous six months. Subject was advised to skip the breakfast in morning. Two medium sized *Bajara bhakri* (*Pennisetum glaucum*) with cooked vegetables in afternoon and evening was given without any anti-diabetic drug. After following advised diet for six months, weight of the subject was reduced up to 15kg. BMI and Waist Hip ratio was decreased. Symptoms like Dyspnea on exertion, fatigue, perspiration, frequency of urine, quantity of urine, decreased from moderate to mild and severe to mild. Investigation report shows significant changes in Fasting and Postprandial sugar in Blood and Urine. It was concluded that consumption of proper diet act as medicine. Diseases occur as result of improper diet. It was found that restricted diet and *Bajara* helps in controlling sugar levels in Diabetes mellitus.

KEYWORDS

Blood sugar, Diabetes Mellitus, Diet, Medicine, Restricted diet, Urine Sugar.



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INTRODUCTION

Incidence rate of Diabetes mellitus patients are increased. In different sectors everybody is having stressful life to prove superiority of their self. Stress is one of the etiological factors of Diabetes Mellitus. Normally sedentary lifestyle and improper diet are the main cause of Diabetes Mellitus. In Ayurveda, it is described that diet acts as medicine if partaken in proper way. Present study was proposed to explain, restricted diet plays an important role in Diabetes Mellitus as curative and preventive measure.

AIMS & OBJECTIVES

To validate *Aahara* (diet) concept as Medicine.

To promote usefulness of *Aahara* as medicine in management of Diabetes Mellitus.

MATERIALS

All Ayurveda text including Charaka Samhita, Sushrut Samhita and Ashtanga Hridaya and Ashtanga Sangraha along with respective commentaries have been reviewed. Internet surfing is done for related topic.

METHODS

Written informed consent was taken before advising the diet. Subject was advised to

skip the breakfast in morning. Two medium sized *Bajara Bhakri* were given in afternoon and evening along with 250 gms of cooked vegetable for six months. Potatoes and rice were advised strictly to avoid. Subject was advised to consume non-vegetarian food like chicken meat and fish weekly once for six months as he belongs to mixed diet.

Body Weight, W/H Ratio, BMI, blood investigations like Hb%, fasting and Post Prandial blood sugar, Lipid Profile, fasting and Post Prandial Urine for Sugar and ECG were done before and after suggested food. Follow up of the subject was taken after 3months and 6 months.

Criteria of Assessment:

Criteria of assessments were Body Weight, W/H Ratio, BMI, blood investigations like Hb%, fasting and Post Prandial blood sugar, Lipid Profile, fasting and Post Prandial Urine for Sugar and ECG. Qualitative Assessment for the symptoms was present in subject done on following gradations in table number 1.

Table 1 Qualitative Assessment for the symptoms was present in subject done on following gradation

Symptoms	Mild	Moderate	Severe
Dysponia on exertion	+	++	+++
Perspiration	+	++	+++
Fatigue	+	++	+++
Frequency of Urine	+	++	+++
Quantity of urine	+	++	+++
Weight gain	+	++	+++



OBSERVATIONS

A 48 years male having weight 82kg, height 5'.5", following mixed diet. He was chartered accountant by profession and from middle socio-economic class. He came with increased symptoms of dyspnea on exertion, fatigue and frequency of urine since last two weeks. No history of any major illness such as Ischaemic heart disease or Diabetes mellitus was found. No family history of Diabetes Mellitus was found. In diet history, subject was having lunch and dinner regularly. At the time of lunch and dinner subject was consuming four middle sized *Chapattis* along with cooked vegetable with one small bowl of rice everyday along with *Daal*. Subject was consuming breakfast regularly. Intermittent snacks and sweets were also consumed by subject regularly in afternoon. Subject was consuming chicken meat and fish once in a week afternoon and evening regularly.

On Examination: Pulse Rate-74/min, R.R-22/min, B.P-130/90 mm of Hg.

Table 2 Symptoms Before Diet Suggestion

Symptoms	Mild	Moderate	Severe
Dyspnea on exertion	-	++	-
Fatigue	-	++	-
Frequency of urine	-	-	+++
Quantity of urine	-	-	+++
Weight gain	-	++	-

Table 3 Investigation Report before Diet Suggestion

Test	Patients Value	Normal Range

Hb	12	12-16gms/dl
Fasting Blood Sugar	151	60-110 mg/dl
Post Prandial Blood Sugar	237	75-140mg/dl
Fasting Urine Sugar	+	Absent
Post Prandial Urine Sugar	++	Absent
S.Cholesterol	218	140-250
S.Triglyceride	34	25-160
LDL Colesterol	60	30-80
HDL Cholesterol	92	90-130
VLDL Cholesterol	20	Upto40
Total Cholesterol	6	<5
ECG	NORMAL	

RESULTS

After following advised diet for six months, weight of the subject was reduced up to 15 kg. BMI and Waist Hip ratio was decreased.

Table 4 Results of Weight in Kg, BMI, Waist-hip ratio

Criteria	Before	After 6 months
Weight in Kg	82kg	67kg
BMI	30.1	24.6
Waist-hip ratio	0.86	0.76

Table – 5 : showing follow up study.

Symptoms	Follow up after 3 months	Result after 6 months
Dyspnea on exertion	++	+
Fatigue	++	+
Frequency of urine	++	+
Quantity of urine	++	+

In this particular study specific diet was given. Daily in afternoon and evening two middle sized *Bajara Bhakri* with any cooked vegetable except potato was advised. Steamed Rice was totally avoided.



This was strictly followed continuously for six months.

In the present study clinically significant changes were observed in symptoms like dyspnea on exertion, fatigue, perspiration, frequency of urine, quantity of urine, weight gain etc. These all symptoms decreased from moderate to mild and severe to mild. Investigation report shows significant changes in Fasting and Postprandial sugar in blood and urine.

DISCUSSION

In *Ayurveda*, diet is considered as medicine if consumed in appropriate way. Mind and body are depending on food. It not only nourishes but also helps to improve strength of the body and mind ¹. Diabetics have to include more fibers and proteins in to their diet and reduce the consumption of carbohydrates and sugar to control blood sugar levels. So *Bajra Bhakari* was advised which has more fibers and proteins.

Subject was put on restricted diet of Wheat (*Triticum aestivum*), Potato (*Solanum tuberosum* L), and Rice (*Oryza sativa*) which are directly causative factors of weight gain and Diabetes Mellitus. When wheat flour is mixed with refined flour, it leads to Diabetes Mellitus. This combination is responsible for concentration of the fiber, vitamins and

minerals. Due to this, pancreas restrains to manage blood sugar levels ².

According to *Ayurveda* these substances have *Madhura rasa* (sweet in taste), *Madhura vipaka* which leads to *Kapha Dosh* *Vridhhi* (Aggravation of *Kapha Dosh*). It is described that Wheat (*Godhuma*) is a *Madhura*, *Sheeta* (cold), *Guru* (Heavy), *Kaphakara* (Aggravation of *Kapha Dosh*). Diabetes mellitus considered as *Kapha pradoshaj Vyadhi* ³.

Bajara is a food with low glycemic index as compared to rice and wheat. This will not raise blood sugar level very fast. *Bajara* is high fiber food which digests gradually and release glucose moderately. This helps in maintaining healthy blood sugar levels for a long period of time. *Bajara* is rich in insoluble fiber that helps in digestion⁴. Although breakfast nourishes body but in Diabetics it over nourishes. As per *Ayurveda* it is considered as *Adhyashana* (over eating) which contributes in leads to *Kapha Vridhhi* in Diabetics.

CONCLUSION

Diet plays an important role in keeping oneself healthy. Consumption of proper diet acts as medicine. Diseases occur as the result of poor diet. The difference of health/happiness and ill health /Unhappiness is based on the difference



between wholesome food and unwholesome food. It is found that restricted diet and *Bajara* helps in controlling sugar levels in Diabetes Mellitus.



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