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The Clinical Study Of Dietary Management Of NIDDM With Yava(Barley)

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Y.M.T.Ayu.Med.College,Kharghar, Navi Mumbai.**Abstract :**

Ayurveda has got three fold management of all diseases i.e. ahar (diet), (exercise) and Aushadha (drug). History of dietetics is very old, which is essential factor for the maintenance of life. It is described in the texts that the intake of proper diet creates advantageous effect and improper diet creates harmful effect in human. According to ayurveda as well as modern science diet plays an important role in etiopathogenesis of diseases. wholesome and unwholesome diet are responsible for happiness and misery. Disease specific dietary measures are the unique concept of chikitsa. In ayurveda yava is mentioned as a specific diet in Diabetes. NIDDM. (type 2) which is the most prevalent NCD in today's life. Ruksha santarpan dravya as yava is specifically advised by charakacharya in prameha chikitsa . The important pharmacological actions of Yavadrata consumption, is effect on Carbohydrate Metabolism, The role of micronutrients of yava (barley) in diabetic health has now turned out to be an effective mean to avoid as well as to control prameha (Diabetes Mellitus). A properly selected diet plan is important in disease management. The present paper aims at putting forward the importance of yava in the dietary management of NIDDM.

Key words: Yava, *Hordeum vulgare*, Barley, NIDDM, dietary management.

INTRODUCTION

Diabetes Mellitus is the most common NCD worldwide and its prevalence is increasing day by day.

The drastic disease diabetes can be controlled by giving comprehensive attention to Ahar (Diet). Nowadays the modern medical scientists are also following the same approach. The discovery of OHA and insulin have been controlling the diabetes, to a big extent, but have many side effects . so the role of Ahar (Diet) and vihar (Exercise) cannot be underrated. Yava (*Hordeum vulgare*) is one of the specific diet explained in *prameha i.e. Diabetes treatment*. Among all pathya, yava is more highlighted by charakacharyas by telling "yavapradhanastubhavet pramehi The different preparations of yava are explained in the text like Yavaud (yavanna), Vatya (yavamanda), Yava Saktu (flour of yava), Apooa (chapatti, poori),

Dhana (fried yava)

.Approximately 50% of the new cases of diabetes can be controlled by dietary management which aims to prevent diabetic microangiopathy by avoiding sustained hyperglycaemia. To reduce the incidence of atherosclerosis by lowering blood lipids, maintaining an ideal body weight and avoiding hyperinsulinemia.

Need of study

Type-2 diabetes mellitus is one of the most prevalent NCD , life style disorders in today's era. Ayurveda, the science of life mentions Prameha which resembles NIDDM in terms of etiology, pathogenesis and presentation of the disease. Therefore, the treatment by dietary management

prescribed in Ayurveda for Prameha has been adopted in the present study, aiming to counteract the complex metabolic derangement of NIDDM and to explore the potential of dietary management by yava in the treatment of NIDDM.

Aim

The study of dietary management of NIDDM with yava(Barley)

Objects

- 1.To Study yava (Barley)and its role in NIDDM in detail .
- 2 .To Study NIDDM in detail according to modern texts.

Material and methods

Study type-a clinical comparative study

Study protocol

Group A: 30 Patients with newly diagnosed NIDDM with BSL ,fasting upto 120 & pp upto 180 mg/dl, not taking any medication

Group B: 30 Patients with concomitant anti-diabetic (Allopathic) medication, whose blood glucose is not well under control FBS>126mg/dl, PPBS>200mg/dl. Their sugar level with present treatment was taken as baseline level.

Inclusion criteria

Patients of NIDDM satisfying subjective & objective criteria.

Age - 35 and 70 years

Sex- male and female

Subjective criteria includes the patients with symptoms as follows Polyuria,Polydipsia,Polyphagia,Excessive

sweating,Lithargic feeling,Fatigue,leg cramps,General weakness .

Objective criteria includes laboratory investigations likeCBC,ESR ,Urine for routine and microscopic examination, lipid profile, Serum insulin and S. HbA1c.

Exclusion criteria

Patients of IDDM (type-1 diabetes mellitus).

Patients below 35 and above 70 years of age.

Patients of uncontrolled hypertension, tuberculosis, carcinoma, and HIV

Proper CRF was prepared for case taking..Consent of all patients was taken.

Dietary medicine and duration

Apoopa (chapatti)prepared with Saktu of dhana(flour of

fried yava), was included in patients regular diet(breakfast,lunch,dinner) with antidiabetic diet.

Duration: 2 months .

The patients under both the groups were provided a proper antidiabetic diet chart planned according to the classics and keeping good glycemic index of the dietary substances and calorie requirement of the patients. Simultaneously they were asked to maintain a routine of 30 min walk in the morning and in the evening hours, follow up was taken after every 15 days. Evaluation of the data through statistical estimation within the group and comparison between the groups AT by diet (After Treatment) were assessed using paired and unpaired Student's t test, respectively. The statistical estimations particularly sample means, SD (Standard Deviation), SEM (Standard Error of Mean), calculated t value and P (Probability) values were obtained by applying the standard formulae. For

comparison of the subjective parameters, Chi-square test was used. $P < 0.05$ was considered as statistically significant.

Properties of yava

	charaka
Rasa	<i>Kashaya, Madhura</i>
Guna	<i>Ruksha, Aguru</i>
Veerya	<i>Sheeta</i>
Vipaka	<i>Katu</i>
doshagnata	<i>Kaphapittashamaka</i>
rogagnata	<i>Sthairyakara, Medoroga</i>

Observation and results

The total 60 patients, consisting of 30 newly detected and 30 chronic cases of NIDDM, were registered in group A and group B, respectively. In the clinical study maximum number (40%) of patients belonged to the age group of 46-55 years and 52% were males. Majority of them belonged to Hindu religion (88%), married (98.6%), house wives (42.6%), educated (84%), and were from middle class (42.6%) of the society. Positive family history for type-2 diabetes was found in 42% of the patients. The symptoms reported included, Polyuria (88%), Lethargic feeling (67%), Fatigue (55%), Polydipsia(82%), Polyphagia (46%), Excessive sweating (51%), leg cramps(55%), general weakness(89%).

Mean FBS and PPBS values in group A and B were (179 mg/dl and 244 mg/dl) and (180 mg/dl and 241 mg/dl) respectively. Before the commencement of the treatment, mean serum cholesterol and serum triglyceride values in group A and B were (199 mg/dl ,163 mg/dl)and (197 mg/dl ,216 mg/dl), respectively. Mean value of S. HDL in group A and B was 45 mg/dl and 42

mg/dl respectively. Mean values of S. insulin (fasting) and S. insulin (pp) in patients of group A and B were 1.75 AIU/mL and 4.57 AIU/mL, respectively. Mean S. HbA1c in patients of group A and B was 9.45% and 12.5% respectively. In group A, 2+ urine sugar was present in 12.8% of the patients, and 1+ in 12.8% patients. In group B, 4+ urine sugar was found in 2.8% patients, followed by 3+ in 16.7%, 2+ in 2.8%.

Statistical analysis

There was statistically highly significant ($P < 0.001$) reduction of 69% and 64% in polyuria in group A and B, respectively. In lethargic feeling , there was statistically highly ($P < 0.001$) significant reduction of 59% and 43% in group A and B, respectively. In polyphagia group A and B showed statistically highly ($P < 0.001$) significant reduction of 82% and 71%, respectively. In Polydipsia , group A and B showed statistically highly ($P < 0.001$) significant reduction of 63% and 64%, respectively. In excessive sweating, group A and B showed reduction of 53% and 43% respectively.both were statistically highly significant ($P < 0.001$). In fatigue, there was statistically highly significant ($P < 0.001$) reduction of 52% and 58% in group A and B, respectively. In leg cramps, in group A and B there was reduction of 30%($P < 0.001$) highly significant and 32%($P < 0.001$) significant respectively. There was statistically highly significant ($P < 0.001$) reduction of 67% and 52% in general weakness in group A and B, respectively .

In FBS parameters, there was statistically significant ($P < 0.01$) reduction of 12% and 10% in group A and B. In PPBS, there was statistically highly significant ($P < 0.001$) reduction of 24% in group A and 18% in B, which is statistically significant ($P < 0.05$). There

was statistically significant reduction ($P < 0.05$) in S. cholesterol, S. triglyceride, and S. HDL in both the groups. There was statistically insignificant ($P > 0.05$) increase of 59% fasting S. insulin and statistically significant ($P < 0.05$) increase of 87% in pp S. insulin levels. There was statistically significant ($P < 0.05$) reduction of 40% in S. HbA1c. Group A showed statistically significant ($P < 0.05$) reduction of 53% in urine sugar and Group B showed statistically insignificant ($P > 0.05$) reduction of 38.4% in urine sugar.

DISCUSSION

In the trial there was highly significant relief subjectively in the symptoms like Polyuria, Polydipsia, Polyphagia, Excessive sweating, Lithargic feeling, Fatigue, leg cramps, General weakness in group A and statistically significant in group B after 2 months. The clinical response of dietary management on FBS and PPBS was observed in 2 groups of patients showed highly significant and significant results in groups A and B respectively in all follow ups.

Yava(Barley) is having *kashayarasa, rukshaguna* which reduces the excess *Kelda* from body by its *shoshana* effect. It also reduces the excess appetite so that patient's intake will be reduced. *Lekhana guna* of *yava* makes *medodhatu vilayana*, which helps in reducing *Medodusti* and beneficial in obesity. Due to *pureeshavardhaka property* it acts as *doshanulomana*. *Yava* also reduces the *dhatushaithilaya in prameha* and improves glucose and lipid control in the patients. Most of the cereals being low in fat and high in carbohydrate however tend to have high GI but barley, oat etc are exception for this. Soluble dietary fibres which increases the viscosity of meal bolus once it has reached the small intestine, where the absorption of nutrients occurs. This high viscosity delays the absorption which prevents sudden fluctuations of blood sugar.

Conclusion :

1. The Dietary management is highly effective in early detected cases of NIDDM patients.
2. Dietary management can be used as a supportive/ accessory treatment in chronic NIDDM patients which requires a long term follow-up
3. Disease specific dietary measures are the unique concept of *Ayurveda*. *Yava* (Barley) is one of the important *pathya ahara* in *prameha* because of *kashaya rasa* and *ruksha guna*, reducing excess *kleda* from body.
4. *Yava* (Barley) can be a good supplier of protein, fibres and micronutrients in diet of NIDDM patients.
5. Consumption of *Yava* foods help to lower blood glucose.
5. The Soluble fibre β -glucan in barley is effective in lowering blood cholesterol and triglycerides and also affect glycemic responses.