

Effect of Gurmar (*Gymnema sylvestre*) Powder Intervention on the Blood Glucose Levels among Diabetics

Renu Paliwal*, Saroj Kathori and Bhupendra Upadhyay**

Department of Food and Nutrition, College of Home Science, Maharana Pratap University of Agriculture and Technology (MPUAT), Udaipur 313 001, Rajasthan, India

**Telephone: 091-0294-2450704, *Mobile: 9460028609,*

**E-mail: renu8543@yahoo.com*

***Department of Statistics, Rajasthan College of Agriculture, Udaipur 313 001, Rajasthan, India*

KEYWORDS Fasting Blood Glucose. Postprandial Blood Glucose. BMI

ABSTRACT *Gymnema sylvestre* is a natural herb. The present study was conducted to study the effect of gurmar leaf powder intervention on the blood glucose level of 20 non-insulin dependent diabetic women, (40-60) years residing in the Udaipur city, Rajasthan. Subjects selected were taking no oral hypoglycemic drug (i.e. newly diagnosed) and were willing to participate in the intervention study. Information regarding name, age, religion, lifestyle pattern, was collected with the help of interview schedule. Anthropometric parameters were collected prior to intervention to assess the nutritional status. Blood glucose levels were assessed before and after intervention period by using one touch horizon glucometer. Everyday 6 gm of gurmar leaf powder was used to intervene the subjects in three divided doses. Dietary survey using 24 hours recall method was also done. (3 days-once in a week). Results of intervention revealed that gurmar leaf powder had positive and encouraging effects over blood glucose levels. No adverse effect was observed on the health status of the subjects and it can thus be concluded that gurmar powder is effective in lowering the fasting as well as postprandial blood glucose levels.

INTRODUCTION

Man can live in happiness without many earthly possessions, but not without good health. (Amirthaveni et al. 2001)

Good health is a major resource and an important dimension of the quality of life. Today with increasing urbanization, changing lifestyle pattern prevalence of diabetes is increasing at an alarming rate. Diabetes is a chronic health condition where the body is unable to produce insulin and breakdown sugar (glucose) in the blood (www.pregnancyandbaby.com) Prevalence of diabetes in adults worldwide was estimated to be about 4 percent in 1995 and will rise to 5.4 percent by the year 2025. The number of adults with diabetes in the world will rise from 135 million in 1995 to 300 million in the year 2025 (King et al. 1998). Nature has provided us a rich storehouse of herbal remedies to cure all ailments of mankind. India has vast and inexhaustible resources of drugs of plants origin. There has

been resurgence in the consumption and demand for medicinal plants (Chandrasekhar et al. 2002). These plants are finding use as pharmaceuticals, nutraceuticals, cosmetics, and food supplements. Even as traditional source of medicines they continue to play a pivotal role. Plants have been source of medicine from ancient times. Gurmar (*Gymnema sylvestre*) is a climbing plant. It is grown in India, China, Indonesia, Japan, Malaysia, Srilanka, Vietnam and South Africa. It is also known as Madhunashini, Gurmarbooti, Meshashringi (Bone 2002).

The documented properties of *Gymnema sylvestre* are it is a stomachic stimulant, laxative, astringent and diuretic (Bone 2002). The objective of the study was to prepare gurmar powder and to find out the effect of gurmar powder intervention on blood glucose levels, so that diabetics can make use of it in future.

MATERIAL AND METHODS

a. Sample Size and its Selection: The study was conducted in the municipal limits of Udaipur city, Rajasthan. Twenty non-insulin dependent diabetic female subjects were selected purposively for the present study with the following criterion:

Address for correspondence: Renu Paliwal
22, Vaishali Nagar, Badgaon, Udaipur
Rajasthan, India
Telephone: 0294-2450704
Mobile: 09460028609
E-mail: renu8543@yahoo.com

1. Subjects selected were female diabetics, as diabetes is relatively more commonly seen in females than males.
 2. A woman in the age group of 40-60 years as NIDDM is mainly a disease of the middle age and elderly.
 3. Women willing to participate and cooperate.
 4. Women taking no oral hypoglycemic drugs were selected, i.e. newly diagnosed patients were taken.
- b. Preparation of Powder:** The leaves were cleaned well to make them dust and grit free. The fresh leaves were washed with tap water. The collected leaves were dried naturally in open shade. The leaves were then churned into a powder.
- c. Gurmar Powder Intervention:** Subjects were personally contacted prior to intervention to brief them about the details regarding the consumption of Gurmar leaves powder, uses and benefits of Gurmar selected subjects were asked to take the prescribed dose half an hour before lunch, breakfast and dinner respectively with water and were asked to follow their normal routine diet and activity pattern throughout the period of investigation. The powder was given in three packets containing 2-gram powder in each packet, each day by the investigator. The intervention was done for a period of one month. Each day 6 gm of powder was given to each one.
- d. Effect of Intervention on Blood Glucose Levels:** The fasting and postprandial blood glucose levels were measured before and after the intervention period of one month.

RESULTS AND DISCUSSION

Table 1 shows that majority of the respondent (65%) belonged to the age group of 40-50 years while rest (35%) respondents were in the age group of 50-60 years. Ramchandran, (1997) revealed that there is a significant increase in the diabetics within the age group of 35-64 years of age. Distribution of subjects on the basis of educational level (Table 2) showed that (10%) of

Table 1: Percentage distribution of the subjects according to the age group

Age group	Number	Percentage of subjects
40-50 years	13	65
50-60 years	7	35

Table 2: Percentage distribution of subjects on the basis of their educational level

Educational level	Number	Percentage of subjects
Secondary	8	40
Senior Secondary	4	20
Graduates	5	25
Post Graduates	2	10
Uneducated	1	5

the respondents were postgraduates, 25% of the respondents were graduates. Nearly 20 percent subjects were educated up to senior secondary and 40 percent subjects educated up to secondary level while 5 percent subjects were uneducated.

Table 3 presents data pertaining to the anthropometric measurements of the subjects (mean height, weight and BMI)

Table 3: Anthropometric measurements of the subjects

Body measurements	Mean±SD
Body Weight (kg)	69.7±5.05
Height (cm)	161.75±4.08
Body Mass Index (kg/m ²)	29.48±4.65

Table 4 shows the effect of powder before and after intervention period. The mean fasting blood glucose level of the subject before starting the intervention was 138.26±12.33 mg/dl and was 132.6±11.39 mg/dl after four week. It statistically signifies that the fasting blood glucose level was significantly lowered at 1% (p<.01). Similarly the mean postprandial blood glucose level before intervention was 181.3±8.68 mg/dl and after intervention it was reduced to 175.3±9.03, which is also significant at 1% (p<.01).

Table 4: Effect of gurmar leaf powder intervention on blood glucose level (0 & 4 week)

Blood glucose mg/dl	Mean±SD		't' value
	0 week	4 week	
Fasting	138.26±12.33	132.6±11.39	11.45**
Postprandial	181.3± 8.68	175.3± 9.03	7.08**

**significant at 1%

Sharma (1999) concluded that *Baelpatra powder* and *Vijayasar* extract two herbal products when given for eight weeks in the daily dosage of 4 gm. and 400 ml. respectively alone or in combination can effectively lower the serum and urine glucose level of diabetic subjects.

Anuradha et al. (2001) observed the impact of administration of *spirulina* on the blood

glucose level of diabetic patients, 4 gm spirulina per day was administered to experimental group for a period of 60 days. Diet counseling was also given to all the 40 subjects through a booklet. The significant reduction in the blood glucose levels (fasting, postprandial and random) in the experimental group was noticed. The control group males and females also show reduction which may be due to impact of diet counseling but there was a significant difference in reduction in blood glucose levels, when two groups were compared.

REFERENCES

- Amirthaveni MP, Vijayalakshmi MN, Niklia 2001. Lipid profile of the heart patients and healthy volunteers and the effect of supplementation of kadukkai (*Terminalia chebula*) on hypercholesterolemic patients. *The Indian Journal of Nutrition and Dietetics*, 38: 83-88.
- Anuradha V, Vidhya 2001. Impact of administration of Spirulina on the blood glucose level of selected diabetic patients. *The Indian Journal of Nutrition and Dietetics*, 38: 40-43.
- Bone K 2002. Official home page of Gymnema: A key herb in the management of diabetes. Retrieved March 18,2007, from <http://www.townsendletter.com> .
- Chandrasekhar U, Haripriya 2002. Studies on hypoglycemic potential of *Salacia Prionoides* on Albino Diabetic rats and the evaluation of the effect of the water extracts of *Salacia prionoides* and *Tinospra Cordifolia* on NIDDM subjects. *The Indian Journal of Nutrition and Dietetics*, 39: 525-528
- King H, Aubert RE, Herman HW 1998. Global burden of Diabetes. *Diabetes Care*, 21: 1414-1431.
- Khanna K, Gupta S, Passi S J, Seth R, Mahna R, Puri S 2003. *Textbook of Nutrition and Dietetics*. New Delhi: Phoenix Publishing House Pvt. Ltd.
- Ramchandran A 2000. Burden of diabetes and its complications in India. *Proceedings of Novo Nordisk Diabetes Update*, 200: 51-57.
- Sharma S 1999. *Management of NIDDM Baelpatra and Vijaysar Extract*. M.Sc. Thesis (unpublished), Udaipur: Maharana Pratap University of Agriculture and Technology.