

# Effect of Supplementation of Mulberry Leaf Powder on the Selected NIDDM Subjects

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**Abstract:** Diabetes mellitus is a universal problem affecting men, women and children of all age groups. The therapeutic implications of mulberry have been illustrated in many investigations. This beneficial effect of mulberry can be fully utilized through supplements in the dietary management of diabetes mellitus. The present study was undertaken to assess the supplementation of mulberry leaf powder on the NIDDM diabetic subjects. The sample consists of 200 randomly selected diabetic subjects from one government and two private hospitals of Tirupati, from which 60 were taken as control and another 60 were placed in experimental group. It is clearly evident from the results that the blood glucose levels of the experimental group of subjects has shown a significant difference when compared to the control group tells that, mulberry supplementation has shown a remarkable decrease in blood sugar levels when compared to control group

**Keywords:** Non-Insulin Dependant Diabetes Mellitus (NIDDM), DNJ 1- Deoxyynojirimycin

## 1. Introduction

Diabetes is a disorder characterised by the passage of sweet urine, excessive urine production, thirst, excessive hunger and in some cases weight loss. Diabetes mellitus can be defined as a group of disorders with a common characteristic of hyperglycemia. Hyperglycemia means an elevated level of glucose in the blood. Diabetes mellitus is one of the leading causes of death and it ranks third among the chronic diseases. The incidence of diabetes is increasing at an alarming rate in India today, it was estimated that India which had 19.4 million diabetics in 2000, is expected to register a near threefold increases by 2025. It is estimated that there are 150 million people with diabetes worldwide, with that the number is expected to be doubled by 2025.

Inspite of drug therapy, management by diet is still the backbone of the control of diabetes. Special food products with low glycemic index are required for diabetic patients. Hence the present study was undertaken to see the effect of mulberry leaf powder which has given as a supplement for diabetic patients and to see the impact on treatment outcome.

## 2. Objectives of the Study

To assess the nutritional status and to see the effect of supplementation of mulberry leaf powder on the blood sugar levels of the selected NIDDM subjects.

## 3. Materials & Methods

The experimental study was carried out with 200 diabetic subjects selected randomly, out of which a purposive sample of 60 subjects were considered as experimental and 60 subjects were in control group. Initially the nutritional status of 200 diabetic subjects was assessed with the help of a well designed questionnaire for assessing the knowledge on nutritional intake by 24 hour recall method. The experimental subjects were given 30gms of mulberry leaf powder and are advised to mix the dietary supplement either

with plain water, butter milk even in foods like breakfast items, snacks, soups etc for a period of two months. For every 15 days blood sugar levels were analyzed using the glucometer with dextrostix. The data was analyzed using SPSS (13.1 version) means, standard deviation, independent sample student t-test, paired t-test was used to know the significant difference between the experimental and control groups.

## 4. Results & Discussion

As per the objectives of the study the sample study consists of NIDDM diabetic subjects in the age group of 30 to 60 years. The percent prevalence of NIDDM subjects was more among people ageing between 40 and 50 years when compared to people below 40 and above 50. The prevalence rate was high among men (67%) where as it was only (33%) among women. Majority of the diabetic subjects are non-vegetarians (61.5%) and vegetarians are (38.5%). Almost all the diabetic patients are taking high calorie diets which might be a reason for obesity.

**Table 1:** Mean blood Sugar levels of the selected NIDDM subjects

S. NO	Group	Test	Blood sugar (mg/dl) Normal Value: 70-125 (mg/dl)	Standard Deviation (±)	t-value	p-value
1	Control Group (N=60)	Initial	145.93	62.89	1.88	0.06
		Final	145.82	63.04		
2	Experimental Group (N=60)	Initial	114.82	45.40	5.72**	0.00
		Final	88.77	22.89		

\*\* Significant at 1 percent level

The blood sugar levels of the selected NIDDM subjects are represented in table no.1 and in fig no.1 shows no significant changes in the blood sugar levels of control group. In the experimental group after supplementation the mean blood

sugar levels were significantly decreased to 22.89 mg/dl  $\pm$  from 45.40 mg/dl it is clearly understood that mulberry leaf powder supplementation has shown a remarkable decrease in blood sugar levels when compared to control group is shown in figure no.1

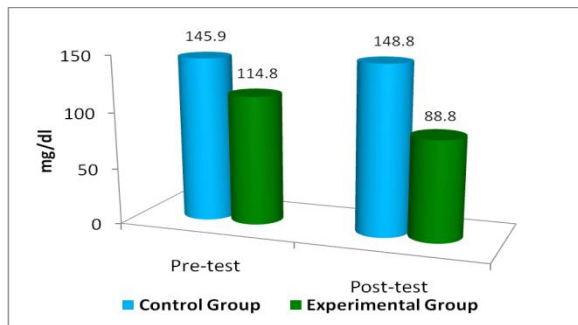


Figure 1: Changes in the blood sugar levels of the selected NIDDM subjects.

## 5. Conclusion

In the management of diabetes mellitus, diet has been recognized as a corner stone of therapy. In recent years, there has been much speculation over the dietary formulation, which may be the most effective in achieving better control of blood sugar and in addition, is most likely to prevent or delay the deliberating complications of diabetes.

The approach to the dietary treatment of diabetes and the therapeutic implications of mulberry has been illustrated in many investigations Medical properties of mulberry helps in reducing blood glucose lies with an interesting ingredient present in mulberry called 1 – deoxynojirimycin (DNJ) very similar to glucose. If the oxygen portion in the chemical structure of glucose were to be replaced with nitrogen, the composition would be exactly the same as the chemical makeup of DNJ. For this reason DNJ inhibits disaccharides (alpha-glucosidase) and can reduce the intestinal absorption of the amount in the body essentially helping to stabilize the level of sugar in the blood.

## 6. Recommendations

Instead of drug therapy for diabetes, there are certain natural herbs with out side effects and also with low cost helps in controlling the blood sugar levels. Among such herbs, mulberry also can be used for human consumption apart from sericulture. Thus the beneficial effect of mulberry can be fully utilized through supplements in the dietary management of diabetes mellitus.

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