



## EFFECT OF HOLY BASIL LEAVES POWDER ON THE LEVEL OF BLOOD SUGAR AMONG PATIENTS WITH TYPE II DIABETES

### Nursing

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### ABSTRACT

Type II diabetes mellitus is a global public health crisis that threatens the economies of all nations particularly developing countries. This study has been conducted to assess the effect of holy basil leaves powder on the level of blood sugar among patients with type II diabetes mellitus. Quantitative research approach, pre-experimental randomized group design was used for the study. 65 samples were selected by purposive sampling technique. Pre-test and post-test blood sugar level was assessed by using a standardized glucometer. The result of the study shows that, in the pre-test, the mean score of fasting was 111.25 whereas the post-test the mean score of fasting blood sugar 109.81 meanwhile pre-test of postprandial blood sugar was 175.29 whereas the post test of postprandial blood sugar was 155.84. It shows that the blood sugar level was reduced among patients with type II diabetes mellitus after administration of holy basil leaves powder. Thus, it can be concluded that the holy basil leaves powder is effective in reducing the blood sugar among patients with type II diabetes mellitus.

### KEYWORDS

Effect, holy basil leaves powder, Blood sugar, Type II diabetes mellitus

### INTRODUCTION

According to the latest 2016 data, from the World Health Organisation, (WHO) is estimated that 422 million adults are living with diabetes mellitus globally and this number is projected to almost double by 2030. The prevalence of diabetes for all age groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. Among top 10 countries in the world India stands second with 69.2 million, people with diabetes and another 36.5 million with pre-diabetes which is a alarming state for various cardiovascular diseases.

A study on prevalence of diabetes in Hathras district (U.P.) reported that the overall prevalence of diabetes in Hathras district population was detected to be 45.9%. where male population was found to have higher incidence (58.7%) of diabetes than females (36.9%) , among age-group the highest incidence was observed in of 60-70 years (53.33%) and lowest in age-group of 40-50 years (32%).

Kerala is the diabetic capital of India with a prevalence of diabetes as high as 20%, double the national average of 8%, the prevalence of diabetes in Thiruvananthapuram was 17% compared to 15% in Hyderabad and New Delhi 4%. Several studies from different parts of Kerala supported the high prevalence of diabetes. One study from central Kerala reported a prevalence of diabetes at 20% and prediabetes at 11%. Other studies have shown a prevalence of 11-19% among men and 15-22% was among in women.

Holy Basil, a medicinal herb, has made important contribution to the health of the human being from ancient times to modern days due to unique medicinal properties. Each part of Tulsi is used for curing many diseases. The present research work deals with leaves of *Ocimum Sanctum*, which is potent antidiabetic herbal medicine. The leaves of *Ocimum Sanctum* contain 0.7% volatile oil, comprising about 71% eugenol and 20% methyl eugenol. The oil contains leaves extract of phenolic compounds flavonoids, eugenol from leaves extract which have potent antidiabetic action.

A randomized, placebo-controlled, cross over study was conducted to evaluate the effect of pharmacological activities of *Ocimum sanctum*, in NES College of Science & Commerce, Jabalpur, India, where the study results that single blind human trial indicated a significant decrease in fasting and postprandial blood glucose levels by 17.6% and 7.3%, respectively. Urine glucose levels showed a similar trend. Further, OS has aldose reductase activity, the phenolic compounds, viz., cirsilineol, cirsimaritin, and appreciable quantities of eugenol (a major component of the volatile oil) from *Ocimum Sanctum* extract of fresh leaves and stems possessed good antioxidant activity, which may help in reducing the complications of diabetes such as cataract, retinopathy. Holy basil leaves powder is easily available, it is been homely grown in India, which makes it cost effectiveness and easily affordable and accessible. It contains eugenol and other phytochemical compounds which have strong anti-oxidant properties which is effective in preventing insulin leading to a drop-in blood sugar in diabetes.

### MATERIALS AND METHODS

The present study was conducted at selected community in Thiruvananthapuram district at Pallichal Gram panchayat which is located in the southern part of Thiruvananthapuram. It has a population of 62589 in which 458 people were suffering from diabetes mellitus among them 65 samples of them selected by purposive sampling. Quantitative research approach, pre-experimental randomized group design was used for the study. 65 samples were selected by purposive sampling technique. Pre-test and post-test blood sugar level were assessed by using a standardized glucometer. An ascend were obtained from the concerned authority and consent were obtained from the subjects after explaining the nature and purpose of study. 65 subjects were selected by purposive sampling technique. As pre-test, fasting blood sugar and post prandial blood sugar level were assessed by using a standardised glucometer for the samples. They were instructed to continue their regular medication and life style modification and with that 2.5 gms of Holy basil leaves were provided after the breakfast for a period of 30 days continuously. Post-test I was done on 16th day and post-test II were done on 31st day for the samples.

### RESULTS

#### Socio demographic variables

43% of samples were between the age group of 30-40 years and 38.5% of samples were in between the age group of 51-60 years. 61.5% were females and 38.5% of the samples were males. 63.1% were Hindus and 0.5% were Christian. 13.8% of samples have habits like alcoholism, 7.7% of the samples have both smoking and alcoholism, and 72.3% of the samples have none of these habits. 30.8% were involved in various other professions, and 26.1 were self-employed. 53.8% of samples have a monthly income of Rs.5001-10000 and 23.1% of samples have a monthly income of Rs.10001-15000. 40% were had diagnosed diabetes mellitus 3-4 years before, and 38.8% of samples were diagnosed diabetes mellitus 7-8 years. 81.53% of samples were in regular treatment schedule and 18.5% of samples were in irregular treatment schedule. 49% of samples were non vegetarian and 16% of samples were vegetarian. 72.3% of the samples have none of these habits and 7.7% of the samples have both smoking and alcoholism. 67.7% of samples were not involved in any exercises whereas 32.3% were involved in exercises among them 52.3% were going for walking, 9.52% were doing cycling and remaining 38.35% were involved in other exercises as yoga and meditation.

**Effect of holy basil leaves on level of blood sugar among patients**  
**Table 1: Mean, standard deviation and t value of Pre-test FBS and Post-test FBS mean score (n=65)**

Group	Mean	SD	Mean Difference	t value	P
Pretest FBS	111.25	17.44	-2.16	0.68	0.25
Posttest FBS	113.41	16.54			

Paired 't' test was done to find out the effect of holy basil leaves powder on level of blood sugar among patients with type II diabetes mellitus. It was found that there was a significant difference between pre-test and post-test level of fasting blood sugar and postprandial blood sugar. From the present study, by comparing the fasting and postprandial blood sugar level, it was found in the pre-test the mean score of fasting

was 111.25 whereas post-test I was 113.41 and post-test II was 109.81. The pre-test of postprandial blood sugar was 175.29 whereas post-test I was 163.83 and in post-test II was 155.84 which was significantly reduced. It shows that the blood sugar level was reduced among patients with type II diabetes mellitus after administration of holy basil leaves powder. This shows the effectiveness of holy basil leaves powder. It is interpreted that there is a significant difference in the blood sugar level of patients with type II diabetes mellitus.

## DISCUSSION

From the present study, by comparing the fasting and postprandial blood sugar level, it was found in the pre-test the mean score of fasting was 111.25 whereas posttest I was 113.41 and post-test II was 109.81. The pre-test of postprandial blood sugar was 175.29 whereas post-test I was 163.83 and in post-test II was 155.84 which was significantly reduced. It shows that the blood sugar level was reduced among patients with type II diabetes mellitus after administration of holy basil leaves powder. The obtained 't' value was statistically significance at 0.05 level. This shows the effectiveness of holy basil leaves powder. It is interpreted that there is a significant difference in the blood sugar level of patients with type II diabetes mellitus. Hence the intervention of administering holy basil leaves powder among patients with type II diabetes mellitus had a positive impact on the level of fasting and postprandial blood sugar. The hypothesis of the study was intended to show the significant difference in the level of blood sugar before and after administering holy basil leaves powder among patients with type II diabetes mellitus. Hence research hypothesis H1 is accepted.

The above study is supported by a study which was conducted to evaluate the antidiabetic effect of *Ocimum sanctum* (holy basil leaves) in type 2 diabetic patients in Mahatma Gandhi Medical College & Research Institute, Puducherry were two different groups were randomly selected for a period of 90 days in which one group received Glibenclamide and other one received Glibenclamide plus *Ocimum sanctum*. The group which received Glibenclamide plus *Ocimum sanctum* also showed a significant drop in the FBS as well as PPBS level. Fasting blood glucose level on day 1 was 171.53 gm/dl, which dropped significantly to 103.50 gm/dl on day 90 and post prandial blood glucose was 254.13 gm/dl on day 1, which dropped significantly to 143.12 gm/dl on day 90.

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