

## Research Paper - Home Science



## Effect of Tulasi (*Ocimum Sanctum*) on Diabetes mellitus

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### Introduction

Diabetes mellitus today is recognized as an epidemic disease in most countries that are undergoing socioeconomic transitions (Duyff, Roberta, 2002). Controlled studies carried out in India as well as in many other countries have revealed that a Tulasi (*Ocimum Sanctum*) intake offers protection against diabetes which is related to nutritionally induce metabolic over load (Wynder et al, 1992).

Diabetes is a disease of great importance from the socio-medical point of view. It is a disease of complications. This disease is very common in India, although the modern allopathic system of medicine is greatly accepted in the treatment of diabetes throughout the world; it has not been able to reach the remote rural areas for various reasons. In our country a large majority of our people cannot afford the expenses of elaborate methods of treatment, (Dechane, 1999).

Because of the local availability of herbs treatment according to the traditional system of medicine is often cheaper (Girti et al, 1997). The herb Tulsi (*Ocimum Sanctum*) belongs to Labiatae family and is available in plenty in India. Janabai et al (1987) reported that tulasi had hypoglycemic effect. Hence, this study was carried out to assess the effect of tulasi (*Ocimum Sanctum*) on blood sugar level.

### Materials and Methods

Present investigation was conducted in Dept. of Home Science, Government Rajaram College, Kolhapur. (Maharashtra) India, during the year 2009-10. Fifty male were selected and divided into group I and II. Both the groups were fed the stock diet throughout the experimental period, group I consisting of 25 males were not given tulasi leaf extract and thus formed the basal control group. Group II consisted of 25 males. This group was given tulsi leaf extra Sub - Cutaneously (150 mg/kg body weight) morning period feeding stock diet. Diabetes was introduced in two to three days.

But the respondents were left as such for 30 days without any treatment to make sure that diabetes was permanently induced. The induction of diabetes in the respondents was checked by collecting urine and analyzing by Benedict's method. In addition blood sugar was estimated by Glucometer. On the 31st day 10 respondents each from groups I and II were sacrificed by decapitation for analysis. Blood samples were collected for analysis. The 25 respondents of group II were divided into subgroups A and B, in II-A group 13 respondents and in II-B group 12 respondents. Group II A respondents were used as experimental control while group II B respondents

were given daily tulsai leaf extract by force feeding for 30 days (10ml of 100 percent solution). At the end of this period i.e. five respondents each from group I, II A and II B were sacrificed. For the remaining five rats in group administration of tulasi leaf extract discontinued and they were scarified after 30 days along with group I group II A respondents.

#### Preparation and Feeding of Tulasi Leaf Extract

100 gm of fresh leaves of tulasi (Ocimum Sanctum) were homogenized with 100 ml distilled water in a warning blender such that a 100 percent solution was got. This was filtered through a muslin cloth and 10 ml of the solution was given to the experimental respondents (Group II B) by force feeding daily in the morning before feeding the stock diet.

#### Biochemical analysis

The blood was analysed for blood glucose, urea, serum cholesterol and serum triglycerides (Varley, 1990).

#### Results and Discussion

Table No. 1. Levels of Blood Glucose in Respondents

Experimental conditions	Basal control (Mean ± S.D.)	Glucose in mg/100 ml (Mean ±S.D.)	
		Experimental control group	Experimental group
Diabetic	23.3 ± 4.089	59 ± 18.30	58 ± 19.50
After 30 days treatment with tulasi leaf extract.	24.8 ± 2.821	64.2 ± 5.821	36 ± 3.687
After discontinuing the treatment with tulasi leaf extract for 30 days.	27.2 ± 3.82	67.8 ± 8.521	47.2 ± .821

It is seen from Table No. 1 that the mean blood glucose level of the experimental control group and experimental group respondents were raised

more than threefold compared to the based control group.

The mean blood glucose value of the experimental group after 30 days treatment with tulasi leaf extract was reduced by 43 percent while in the experimental control group the mean blood glucose value had recorded a further increase. On discontinuing the treatment with tulasi leaf extract, the blood glucose value increased by 25 percent in the experimental group which further confirms the fact that tulasi leaf extract has hypoglycemic effect.

Table No. 2. Levels of Blood Urea in Respondent

Experimental conditions	Basal control (Mean ± S.D.)	Urea in mg/100 ml (Mean ±S.D.)	
		Experimental control group	Experimental group
Diabetic	24 ± 4.109	58 ± 18.21	58 ± 18.32
After 30 days treatment with tulasi leaf extract.	25 ± 2.882	62 ± 5.381	34 ± 3.721
After discontinuing the treatment with tulasi leaf extract for 30 days.	27.2 ± 3.82	65 ± 8.564	45.2 ± 4.815

Table No. 2 reveals that blood urea was more than double in diabetic respondents of treatment with tulasi leaf extra the blood urea value decreased by 38 percent when the treatment was discontinued it again registered an increase. This shows that tulasi leaf extract reduce level of blood urea.

Table No. 3. Serum cholesterol levels of respondents :

Experimental conditions	Basal control (Mean ± S.D.)	Cholesterol in mg/100 ml (Mean ±S.D.)	
		Experimental control group	Experimental group
Diabetic	93 ± 15.55	274 ± 9.94	274 ± 9.12
After 30 days treatment with tulasi leaf extract.	97 ± 13.12	282 ± 8.05	209 ± 15.5
After discontinuing the treatment with tulasi leaf extract for 30 days.	98 ± 18.05	287 ± 12.58	235 ± 11.5

From the values presented in Table No. 3, it is

seen that the mean serum cholesterol value of the experimental group after 20 days treatment with tulasi leaf extract was reduced by 25 percent discontinuing the administration of tulasi leaf extract has hypocholesterolemic effect. This shows that tulasi leaf extract reduce level of blood urea.

Table No. 4 Serum Triglyceride levels of Respondents :

Experimental conditions	Basal control (Mean $\pm$ S.D.)	Triglyceride in mg/100 ml (Mean $\pm$ S.D.)	
		Experimental control group	Experimental group
Diabetic	42.51 $\pm$ 2.89	166.21 $\pm$ 5.42	166.28 $\pm$ 5.39
After 30 days treatment with tulasi leaf extract.	43.23 $\pm$ 2.87	170.21 $\pm$ 4.36	102 $\pm$ 5.21
After discontinuing the treatment with tulasi leaf extract for 30 days.	44.29 $\pm$ 5.24	181.82 $\pm$ 5.85	132.2 $\pm$ 5.28

The mean serum triglyceride value of the experimental group after 30 days treatment with tulasi leaf extract was reduced by 40 percent (Table 4) in the experimental group the mean serum triglyceride level had again increased by about 16 percent on discontinuing the administration for 30 days. This shows that tulasi leaf extract lowers triglyceride level in serum.

### Summary and Conclusion

In the present investigation an attempt has been made to determine quantitatively the effect of tulasi on blood sugar level and its possible use as a substitute for oral hypoglycemic drugs. There was a significant fall in the levels of blood glucose, blood urea, serum cholesterol and serum triglyceride when alloxan induced diabetic respondents was treated with tulasi leaf extract

for 30 days. The present study reveals that tulasi has ant hyperglycemic action.

### References

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