



# Effect Of *Ocimum Sanctum* Extract On Blood Glucose Levels In Alloxan Induced Diabetic Mice.

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## Abstract

The present study was aimed at diabetic studies with orally administered aqueous leaf extract of *Ocimum sanctum* Linn (OSE). In this study four groups of mice (n=6/group) were tested, in which the first group the normal group, the second group diabetic control group was injected with 70 mg/kg bw alloxan, and the third and fourth groups of diabetic mice were orally treated with doses of 100 and 200 mg/kg bw of *O. sanctum* for 28 days, and a blood glucose study was taken. Treatment with OSE did show some changes in their blood glucose.

**Keywords:** *O. sanctum*, Antidiabetic, Alloxan, Glucose, Aqueous, Antioxidant

## Introduction

The genus *Ocimum* contains more than 150 species of basil. (Javanmardi et al., 2002). In the food, cosmetic, medicinal, and aromatherapy sectors, basil oil is used to provide flavor and smell. Plant phenolics, which may be found in all plant components such fruits, vegetables, nuts, seeds, leaves, roots, and barks, are the main source of natural antioxidants (Pratt and Hudson, 1990). The tropical regions of Africa, Central and South America, and Asia are home to Tulsi. The Lamiaceae family includes the genus *Ocimum* (Dzoyem et al., 2017). One of the most well-known *Ocimum* species is *O. sanctum*, which is fragrant by nature and is grown extensively for its essential oil content as well as other uses in medicine and fragrance. It is also grown for religious and ceremonial purposes in India. Antioxidant, antidiabetic, anti-inflammatory, antibacterial, antistress, anticancer, and wound-healing properties have also been identified for *O. sanctum*. (Singh and Chaudhuri, 2018). One of the ecotypes with a variety of therapeutic uses is tulsi (Cohen, 2014). Although, there are many reports regarding the use of tulsi extract in medicinal practices for many diseases in humans, there is only a limited usage of tulsi extract against species, *O. sanctum* was done, and their antidiabetic properties were evaluated against alloxan induced diabetic mice.

## Botanical description of the plant:-

**Height** - Small annual or transient perennial shrub with a maximum height of 3.3 feet (1 m)

**Leaves** - Simple, opposite, and green or purple in colour with a powerful aroma. The leaves can reach a maximum length of two inches (5 cm) that can be elliptic, oblong, obscure, or acute.

**Flowers** - Tiny tubular blooms that develop in terminal spikes and can be either purple or white. Seldom are the flowers longer than 5 mm, and their sepals are either green or purple.

**Fruits** - Nutlets that yield a lot of seeds. The seeds range in colour from yellow to crimson.

**Stems** - Hairy stems

## Materials and Methods

### 1. Experimental Animals

Mature albino mice were selected for the investigation. There were four groups of mice. Each group consisted of 6 mice individuals. Albino mice were maintained under proper hygienic conditions in a well-ventilated room. They were housed in polypropylene cages and maintained at a controlled environmental temperature in the P.G. Department of Zoology, Bhagalpur, animal house, following departmental rules and regulations.

### 2. Plant Material and Preparation of Extract

Aqueous suspension of *O. sanctum* was prepared each day freshly. 20 g of fresh leaves of Tulsi were washed thoroughly with Double distilled water and then cut into small pieces. These finely cut pieces will mix with 100 ml of doubled distilled water, and this mixture will keep for boiling for a period of 5 minutes. After cooling, it was filtered through Whatman **Filter paper no. 1**.

## Result

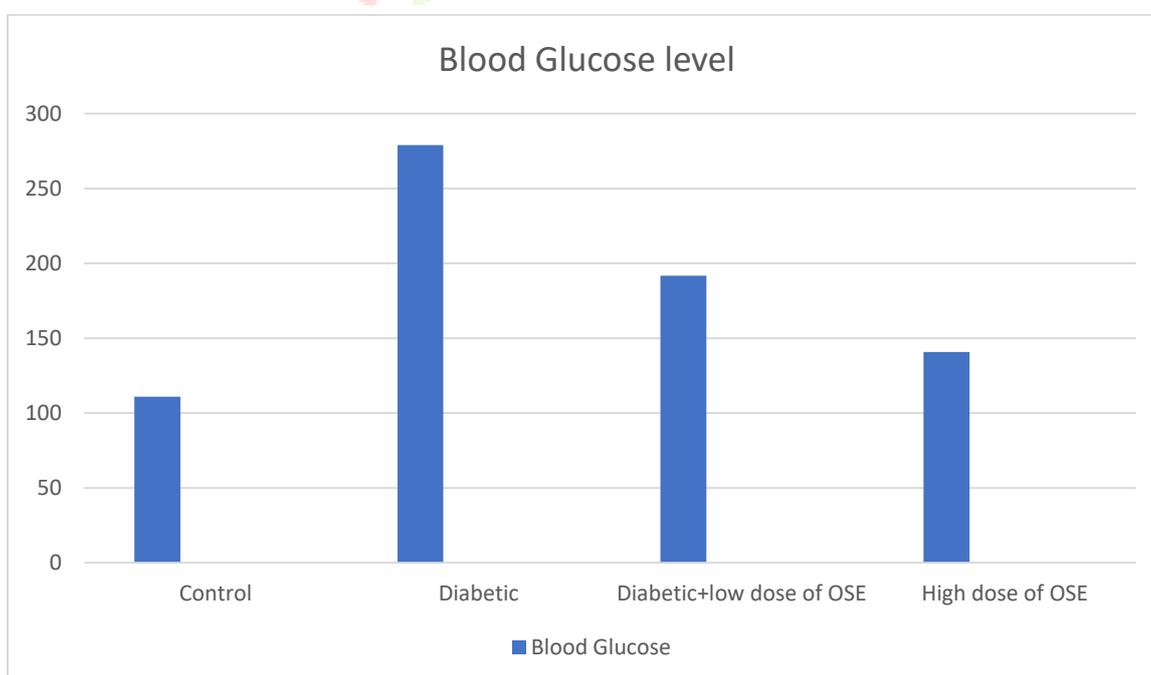
### Measurement of fasting Blood glucose

Measurement of fasting blood glucose: On the 28th day post-treatment, fasting blood glucose was measured using a Glucospot Glucometer.

	Control	Diabetic mice	Diabetic+ <i>O. sanctum</i> 100mg/kg bw	DIABETIC + <i>O. sanctum</i> 200 mg/kg bw
	Weight of mice before administration of alloxan	Weight measured after 28th day of administration of alloxan	Weight measured after 28th day of administration of alloxan	Weight measured after the end of 28th day
Result	110.83 ± 10.473	279.00 ± 38.07	191.66 ± 2.06	140.83 ± 7.98

All values are expressed in mean ± Standard error of mean (n=6).

All data were found to be significant at 5% level of significance where  $p < 0.05$ .



## Statistical analysis

The data on biological studies were reported as mean  $\pm$  Standard error of mean (n = 6). For determining the statistical significance, standard error mean and analysis of variance (ANOVA) at 5 % level significance was employed. P values < 0.05 were considered significant (Bolton S., 1997).

## Discussion

In diabetics, inhibitors of  $\alpha$ -amylase reduce the amount of prandial blood glucose rise and postpone the small intestine's conversion of carbohydrates (Toma et al., 2015). Additionally, Suanarunsawat et al. (2016) found that the hexane extract of *O. sanctum* has 40–50% antidiabetic efficacy. According to current study's findings, tulsi extracts may have hypoglycemic effects due to the presence of phenolics and flavonoids. According to a previous study on  $\alpha$ -amylase inhibitors derived from medicinal plants, a number of possible inhibitors are flavonoid based. (Mccue et al., 2005).

## Conclusion

It is possible to draw the conclusion that the *Ocimum* plant has antidiabetic properties and that the aqueous extract of *Ocimum sanctum* Linn produces better results. *Ocimum* species plants are utilized all over the world for their high therapeutic potential in treating a variety of illnesses. Additionally, certain new extraction techniques and solvents that haven't been used yet can be used to find some fresh findings in this field.

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