



Anti-secretory effect of *Ocimum sanctum* linn

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Abstract

The fixed oil of *Ocimum sanctum* L. (Labiatae) was found to possess significant antiulcer activity against aspirin-, indomethacin-, alcohol-, histamine-, reserpine-serotonin- and stress- induced ulceration in experimental animal models. Significant inhibition was also observed in gastric secretion and aspirin – induced gastric ulceration in pylorus ligated rats. The lipoxygenase inhibitory, histamine antagonistic and antisecretory effects of the oil could probably have contributed towards antiulcer activity. *Ocimum sanctum* fixed oil may be considered to be a drug of natural origin which possesses both anti- inflammatory and antiulcer activity.

Keywords: anti-secretory, pylorus ligation, fixed oil of *Ocimum sanctum*, anti-ulcer

Introduction

In traditional medicine, several plants and herbs have been used to treat gastrointestinal disorders, including gastric ulcers. The first drug effective against gastric ulcer was carbenoxolone, discovered as a result of research on a commonly used indigenous plant, Glycyrrhiza glabra (Leguminosce). Studies on cabbage previously employed as an antiulcer agent in folk medicine, has led to the development of gefarnate which acts by enhancing the gastric mucosal strength. Banana fruit has also been found to inhibit peptic ulceration. Reported the antiulcer activity of species of the companulaceae in experimental models, while found solon, a flavonoid, to be effective against ulcer in experimental animals. Melia azedarach (Meliaceae) has been observed to inhibit stress- induced ulcer in rats.¹⁻⁵

Ocimum sanctum is found throughout India and is commonly called Tulsi in Hindi and Holy Basil in English, Experimental studies have demonstrated the hypoglycemic effect of the leaves of the plant. A survey conducted in human subjects also showed significant decrease in fasting and postprandial blood glucose level on administration of holy basil leaves.⁸

In the present research program based on the anti-oxidant effect of *Ocimum sanctum* linn, the fixed oil of its was evaluated for anti-secretory activity by using experimental animal model.^{17,10}

Methodology

Plant Material

The dried seeds of *Ocimum sanctum* Linn were collected. Seeds were crushed and cold macerated in petroleum ether (40-60° C) for 3 days. The petroleum ether extract was evaporated and the oil was filtered. The fixed oil (weight per ml at 25 °C is 0.8750) obtained was subjected to different studies on laboratory animals.

Animals

Albino rats (Wistar) weighing 150-200 gm and mice weighing 20-25 gm of either sex were used in this study. The animals were acclimatized for one week under laboratory conditions. They were housed in polypropylene cages and maintained at 27° C+2° C under 12 hours dark/light cycle. They were fed with standard rat feed (Gold mohur Lipton India Ltd.) and water ad libitum was provided. The litter in the cages was renewed thrice a week to ensure hygiene and maximum comfort for animals.

Pylorus Ligated Ulcer:^{116]}

Albino wistar rats of either sex weighing between (150-250gms) were divided into three groups of two animals in group.

Step 1. Group-I Control (received only vehicle per oral route)

Step 2. Group-II Standard (Ranitidine 20 mg/kg per oral route)

Step 3. Group-III Test (Fixed oil of *Ocimum sanctum* Linn.3.0ml/kg per oral route)

In this method albino rats were fasted in individual cages for 24 hr. Care was being taken to avoid coprophagy. *Ocimum sanctum* Linn. Fixed oil or standard drug or control vehicle was administered 30 min prior to pyloric ligation. Under light ether anesthesia, the abdomen was opened and the pylorus was ligated. The abdomen was then sutured. At the end of 4 hr. after ligation the animals were sacrificed with excess of anesthetic ether, and the stomach was dissected out. Gastric juice was collected into measuring cylinder. The pH of the gastric juice was

recorded by pH meter. The stomach was then washed with running water to see for ulcers in the glandular portion of the stomach. The number of ulcers per stomach were noted and severity of the ulcers scored microscopically with the help of hand lens(10X) and scoring was done as per Kulkarni (1987). 0 = Normal stomach, 0.5 = Red coloration, 1 = Spot ulcers, 1.5 = Haemorrhagic streak, 2 =Ulcer >3 mm but < 5 mm, 3 =Ulcer > 5 mm.

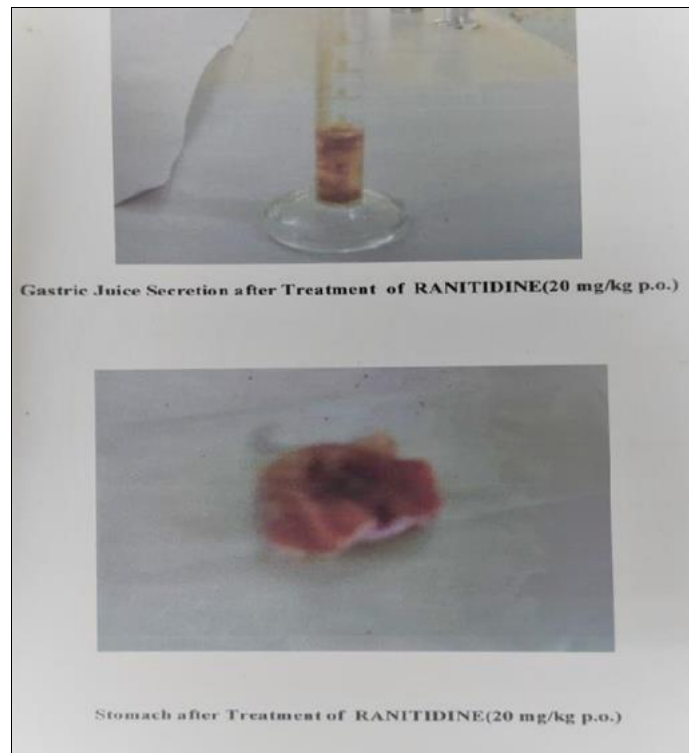


Fig 1: Effect of Ranitidine drug on Stomach

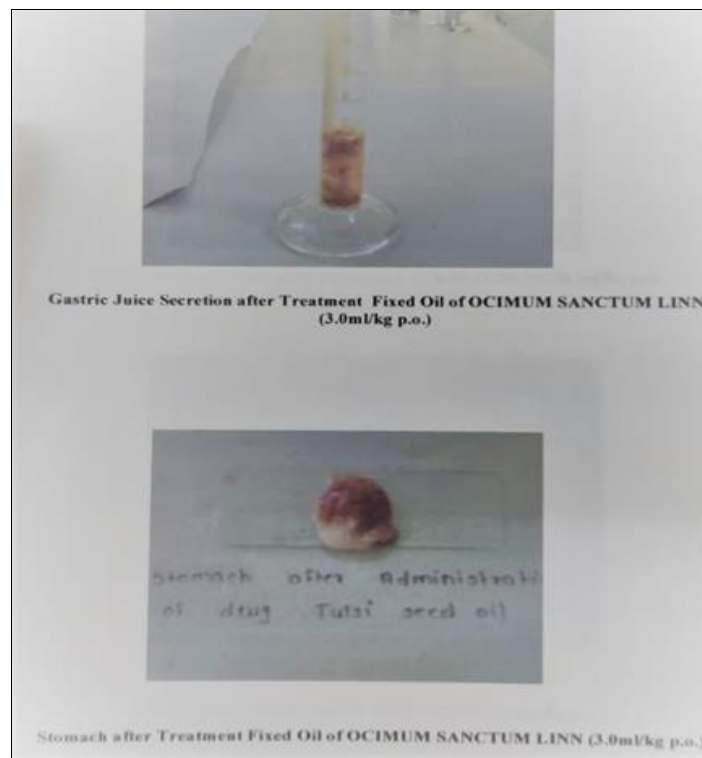


Fig 2: Effect of *Ocimum sanctum linn* oil on Stomach

Gastric ulcers and increased volume of gastric juice induced by pylorus ligation to fasted rats were reduced significantly by oral pretreatment of animals with fixed oil of *Ocimum sanctum Linn.* (3.0 ml/kg per oral route.) The Anti secretory activity of *Ocimum sanctum Linn.* is also comparable with the standard antiulcer-Ranitidine (20 mg/kg p.o.)

Table 1: The observed results are represented.

Sr. No.	Group	Treatment	Vol. of Gastric juice
1	Control	Receiving only vehicle	3.2
2	Standard	Ranitidine 20 mg/kg per oral route	2.5
3	Test	Fixed oil of <i>Ocimum sanctum</i> linn.3.0 ml/ kg per oral route	2.2

Discussion

Various experimental methods are used to evaluate anti-secretory and antiulcer activity such as aspirin, indomethacin, histamine, serotonin and reserpine induced gastric ulceration. In the present investigation the pylorus ligation induced gastric model was used to determine the anti-secretory effect of fixed oil of *Ocimum sanctum* Linn. The pylorus ligation in rat caused the increased secretion of gastric juice in control group (receiving only vehicle) it has also caused the ulcers due to the mucosal damage. In the present investigation ranitidine (20 mg/ kg per oral route) is used as standard antiulcer drug.

The pretreated rats with fixed oil of tulsi has shown significant anti-secretory and antiulcer effect in test group. The productive effect of fixed oil of *Ocimum sanctum* Linn. Against the pylorus ligated rats was found better and comparable that of ranitidine.

Conclusion

Based on fore going observations and results it could be concluded that petroleum ether extract of *Ocimum sanctum* Linn. i.e fixed oil of *Ocimum sanctum* possess significant anti-secretory activity.

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