

OCIMUM SANCTUM LINN - A STUDY ON GASTRIC ULCERATION AND GASTRIC SECRETION IN RATS

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Abstract : The antiulcerogenic property of *Ocimum sanctum* Linn (Tulsi) was studied in pyloric ligated and pyloric ligated & aspirin treated rats. The extract of OSL reduced the ulcer index, free & total acidity on acute and chronic administration. Seven days pretreatment with the drug increased the mucous secretion also. It may be concluded that OSL extract has antiulcerogenic property against experimental ulcers, and it is due to its ability to reduce acid secretion and increase mucous secretion.

Key words : ocimum sanctum Linn (OSL) acidity peptic activity sialic acid

INTRODUCTION

The antistress and the antiulcerogenic properties of *ocimum sanctum* Linn (OSL) after i.p., have been documented in albino rats (1). From this laboratory it has been reported that the extract of OSL, p.o. reduced the incidence of gastric ulceration in swimming endurance test in albino rats (2). But the exact mechanism of antiulcerogenic effect of OSL is not yet clear. So, in this study, an attempt has also been made to throw some light on its mechanism of action.

METHODS

Fresh leaves of OSL were air dried at room temperature. 100 g of dried leaves were hydrodistilled in 250 ml of distilled water in a cleavanger apparatus for 90 minutes and the steam distilled product was collected in a flask based on the ice-cold water. The pH of the product was 6.5. The same product was used throughout the period of study.

Albino rats of Wistar strain of either sex weighing 150-200 g were kept on standard diet and water *ad libitum*. The animals were divided into 6 groups of six each. In one group (T_1) pyloric ligation was done and the rats were treated with OSL (0.1 ml/100 g orally)

five minutes before ligation. The animals were sacrificed after 20 hours. In group T_2 , rats were treated with OSL in the same dose for 7 days, pyloric ligation was done on 7th day and were sacrificed after 20 hours. In group T_3 , rats were treated with OSL in the same dose for 7 days. On the seventh day, pyloric ligation was done and aspirin (in 1% carboxymethylcellulose) in a dose of 100 mg/kg was administered fifteen minutes after pyloric ligation and the animals were sacrificed after seven hours (3). Each group had its own control (C_1 , C_2 , C_3) which were treated with same volume of saline.

After sacrificing the animals, the gastric juice was collected. pH, free and total acidity, peptic activity (4,5) and sialic acid content (6) were estimated and ulcer index was calculated (5). Statistical analysis was done by applying unpaired 't' test.

RESULTS

In OSL treated groups of rats, pH of gastric juice was increased, free and total acidity and ulcer index were reduced significantly, when compared to the corresponding control group. Sialic acid content in group T_2 increased significantly and peptic activity was not altered in any group of rats (Table I).

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TABLE I: Effect of OSL on gastric ulceration and gastric secretion in rats.

Group	pH	Ulcer index	Free acidity (M.Mol/Litre)	Total acidity (M.Mol/Litre)	Peptic activity (M.Mol Tyrosine/mlo)	Sialic acid (optical density)
C ₁	3.2 ± 0.12	5.8 ± 0.26	20 ± 1.2	84 ± 4.2	382 ± 36	0.21 ± 0.05
T ₁	4.6 ± 0.35*	3.6 ± 0.28**	14 ± 1.0*	70 ± 2.6*	378 ± 37	0.19 ± 0.04
C ₂	3.1 ± 0.14	5.6 ± 0.25	19 ± 1.23	84 ± 4.25	380 ± 37	0.18 ± 0.05
T ₂	6.4 ± 0.38**	2.6 ± 0.16***	11 ± 1.10**	64 ± 2.4**	375 ± 31	0.38 ± 0.06*
C ₃	3.8 ± 0.15	6.2 ± 0.24	22 ± 1.26	87 ± 4.23	389 ± 35	0.18 ± 0.06
T ₃	5.3 ± 0.35*	4.8 ± 0.14**	15 ± 1.10*	71 ± 2.6*	386 ± 42	0.23 ± 0.05

T₁ = Single day treatment with OSL in pyloric ligated rats : T₂ = 7 days treatment with OSL in pyloric ligated rats :
T₃ = 7 days treatment with OSL in pyloric ligated aspirin treated rats.

C₁, C₂, C₃ = Corresponding control groups of rats.

*=P <.05, **= P <.01, ***= P <.001 vs respective control.

Number of animals in each group was 6.

DISCUSSION

The observations suggest that OSL extract has significant antiulcerogenic property either on acute or chronic administration. The antiulcerogenic property of the extract may be attributed to its ability to reduce

acid secretion and increase mucous secretion. It is also evident that OSL requires a few days of pretreatment to reduce mucous secretion, whereas its effect on acid secretion is almost immediate. Mechanism involved can not be ascertained from the present investigation and require further studies.

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