Evaluation of Antiulcer Activity of Ocimum Sanctum in Rats

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Abstract

Aqueous extract of *Ocimum sanctum* was evaluated for its Antiulcer activity against methanol induced ulcer in Wistar rats. The aqueous extract of *Ocimum sanctum* at the dose rate of 100mg /kg an 200 mg/kg per orally exhibited significant protection against ethanol induced gastric ulceration. The present investigation revealed that *Ocimum sanctum* exhibited significant antiulcer activity by enhancing antioxidant potential of gastric mucosa thereby reducing mucosal damage.
Keywords: Antiulcer activity, Herbal drug, Antioxidant,

In the present study *Ocimum sanctum* was evaluated for its anti-ulcer activity against ethanol induced gastric ulceration in rats.

Materials and Methods

Preparation of Aqueous extract

100 gm of powder of dried *Ocimum Sanctum* was boiled with 100 ml in the distilled water in flask for 24 hrs.The flask was kept on heating mantle for boiling till the content were reduced to half the content then cool and filtered from muslin cloth so as to remove the insoluble material. The filtrate were again filtered through an ordinary filter paper and then poured in an ordinary cleaned and already weighed petridish and placed on hotplate for complete evaporation, care was taken to avoid charring then extract was cooled at room temperature an weighed to calculate extractability percentage and finally stored in desiccators in cool and dry place.

Animals

Wistar rats of either sex 180-200 gms were use for present investigation, they were feed with standard pellet, diets and water adlibitum.

Ethanol induce gastric ulceration (Hollander,et.al. 1985)

The rats were divided into 4 groups. Group 1 served as vehicle control which received distilled water whereas animals in group 2 received the reference drug omeprazole (10mg/kg PO). Rats in group 3 and 4 received aqueous extract of Ocimum sanctum at the rate of 100mg/kg and 200mg/kg p.o.respectively. The animals were administered with ethanol at the dose of 1ml/200 gram orally after the last dose of aqueous extract of *Ocimum sanctum* and reference drug omeprazole .After 1 hour animals were scarified by cervical dislocation and stomach was excised along with greater curvature and examined for ulcer. The fundic mucosal part of the stomach was homogenized (5%)in ice-cold 0.9%normal saline with a Potter-Elvejham homogenizer. The homogenate was then centrifuged 800×g for 10 min followed by centrifugation of the supernatant at 12000×g for 15 min and the mitochondrial fraction was used for estimation of lipid peroxide and glutathione. Lipid peroxidation (TBARS) was estimated according to method of *Ohkawa et. al* (1979). Glutathione was determine by Ellman's reaction using 5'5'-dithio-bis-2-nitrobenzoic acid (DTNB) as described by Moron et al (1979).

Statistical analysis

The results are expressed as Mean±SE and statistical significance by means of ANOVA followed Dunet's test $p<0.05$ was considered significant.

Results and Discussion

In the present study *Ocimum sanctum* was evaluated for its anti-ulcer activity against ethanol induced gastric ulceration in rats. Oral administration of ethanol produces severe ulceration and significantly elevate lipid peroxide level, glutathione level .The aqueous extract of *Ocimum sanctum* significantly reduces the incidence and severity of ulceration in ethanol induce ulcer model. The dose rate of 100mg/kg and 200 mg/kg b.wt. Orally afforded dose dependant i.e. 33.07% and 52.52% protection whereas the reference drug omeprazole exhibited 60% protection.

Ulcers are caused due to imbalance between aggressive and defensive factors of the gastric mucosa.

Table-1. Results of different treatments on Ulcer.

Treatment	Dose(mg/kg)	Ulcer index	Percentage inhibition	Lipid peroxidation (mmol/mg protein)	Glutathione (mmol/mg protein)
Normal	-	0	100	1.45+0.11	10.2+0.9
Ethanol + vehicle	-	25.7	-	4.61+-0.23	4.3+0.2
Ethanol + omeprazole	30	10.3	60	1.82+0.14	5.2+0.3
Ethanol + extract(100mg/kg)	100	17.2	33.07	3.52+0.20	8.8+0.7
Ethanol + extract(200mg/kg)	200	17.2	52.52	2.38+-0.17	6.7+0.3

Different therapeutic agents including plant extracts are used to inhibit the gastric acid secretion, or to stimulate the mucosal defense mechanism. Mucosal defense mechanism by increasing the mucus production protecting the surface epithelial cells, or interfering with the PG synthesis. Ethanol induces ulcers by the reduction of gastric mucosal blood flow and mucus production in the gastric lumen, a decrease in endogenous glutathione and prostaglandins levels and increase of ischemia, gastric vascular permeability, generation of free radicals, and production of leukotrienes. It had been found that oxygen-derived free radicals are implicated in the mechanism of acute and chronic ulceration and scavenging these free radicals can play an appreciable role in healing these ulcers. Ethanol induced generation of free radicals elevate the lipid peroxide level and reduces the cysteine, which is required for glutathione synthesis, thereby depleting glutathione levels. Reduced glutathione is found in high concentration in gastric mucosa of rats and humans. Glutathione is important for the maintenance of mucosal integrity and depletion of glutathione from the gastric mucosa induces macroscopic mucosal ulceration.

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