STUDY OF ANTIULCER ACTIVITY OF ROOTS OF *ALANGIUM SALVIFOLIUM* LINN IN PYLORUS LEGATED RATS

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ABSTRACT

Different extracts of *Analgium salvifolium* roots were tested for its antiulcer activity in pylorus ligated rat model. The effect was assessed by parameters like Total acidity(TA),Free acidity(FA),Peptic activity(PA), Ulcer Index(UI) .The antiuler activity of all extracts were compared to the standard drug ranitidine. The study showed that all extracts were showing reductions TA, PA, FA and UI among which the extract of petroleum ether showed significant reduction upon those parameters. *Alangium salvifolium* linn 400mg/kg (PE extracts) shows complete inhibition ulceration and results are at par with 5mg/kg of ranitidine.

KEY WORDS: *Alangium salvifolium,* total acidity, free acidity, Peptic activity and ulcer index.

1.INTRODUCTION

Cimetidine, Ranitidine, Famotidine, Omeprazole, Lansoprazole etc allopathic drugs are known for their antiulcer activity (Douglas, 1985). It is known that there is no definite therapy in allopathic systems for complete care of peptic ulcer. The existing therapy causes symptomatic relief only. The most allopathic drugs after long use precipitate their own toxic activities. According to the belief of ayurvedic physicians' ulcer formation occurs due to improper digestion of food, excess of stress and excess secretion of HCl (Gupta, 2005). It is found that some tribals of south Orissa are using *Alangium salvifolium* root extract for treatment of peptic ulcer and hyper acidity, on such traditional use, the toxic manifestations are not found. But there is no scientific proof so far established cure in support of such utility in literature. Hence the said plant is selected to test its extracts in experimentally induced peptic ulcer in (shay and Meranze,1945) rat model.

2.MATERIALS AND METHODS

Alangium salvifolium Linn roots were collected from Mahuda (Orissa,India) in the month of February. The roots were dried under shade and pulverized into powder by a mechanical grinder. The powder was then passed through 40 mesh size sieve and stored in a close vessel for further use. The dried powdered roots of *Alangium salvifolium were* successively extracted with petroleum ether (60-80°c), chloroform, methanol and aqueous in soxhlet apparatus. After the effective extraction the extracts are concentrated by evaporating the solvent completely.

Animals Used:

Adult westar Albino rats (150-170gm) were used for this experiment, obtained from M/S Chakravorty Enterprises, Kolkata. The rats were housed in standard polypropylene cage at room temperature of 27-30°c and 60-65% relative humidity and had free access to food and water *ad libitum*. The rats were used for the experiment after an acclimatization period of one week. All procedures described were and approved by the Animal Ethical committee of UDPS registration no (990/C/06/CPCSEA).

Studies in Shay rat:

Rats weighing 150-170gms were fasted for 24hr (Lowry,1951) and care was taken to avoid coprophagy. Rats were divided into six groups each group consists of six rats (both male and females).One group is kept as control and for pylorus ligation was made under the ether anesthesia. The control pylorus ligated rats (6) were administered 1% Carboxy methyl cellulose suspension soon after recovery from ether anesthesia. Similarly 2nd group are operated and administrated 5mg/kg of Ranitidine suspended in 1% Carboxy methyl cellulose. Soon after recovery from ether anesthesia similarly 4,5,6, groups were administrated with Methanol extract of *alangium salvifolium root* 100,200 and 400mg/kg body weight dose to separate groups of Shay rats(each group

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consist six Shay rats) orally. All the groups were kept separately in cages. The animals were maintained without food and water for 24hr after pylorus ligation and were killed by spinal 'traction. The abdomen was opened; the esophagus end of stomach was isolated with its contents intact. The greater curvature of the stomach was cut longitudinally and the gastric juice was collected into a beaker and washings were collected in to a beaker. Distilled water 9ml was added and centrifuged. The volume of the supernatant liquid was measured and aliquots were taken to determine the total acidity, free acidity, peptic activity of gastric juice. The stomach mucosa was observed for ulcers after washing with stream of tap water (Hillyard and Grandy 1963).

In preliminary study of Pet.ether extract, aqueous extract did not protect the mucosa and acidity was not reduced. So these were not tried in further number of rats.

Total acidity:

A volume of 5ml diluted gastric juice was titrated with 0.01 N sodium hydroxide run from a micro burette using phenolphthalein as an indicator and the acidity was expressed as mg.HCl/lOOgm body weight of rat.

Free acidity:

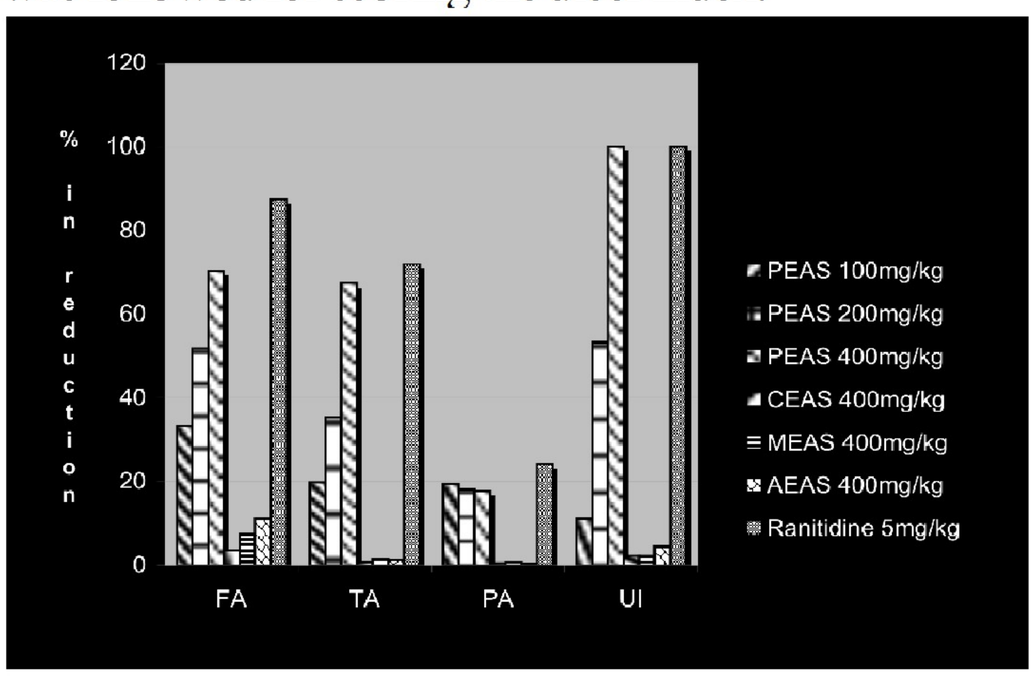
It is determined by using Toffer's reagent as an indicator and titrating with sodium hydroxide which was run until canary yellow colour was observed.

Peptic activity

The method of lowry, 1951 was used for determination of peptic activity and the activity was expressed as μ mol Tyrosine/100gm body weight (Andersan and Soman,1965).

Ulcer index:

The method of Anderson and Soman (1965) was followed for scoring the ulcer index.



Effect of methanol extract of *Alangium salvifolium on* rats, Free acidity, Total acidity, Peptic activity, Ulcer index and % reduction in shay rats and its comparison with Ranitidine.

Treatment	Dose in mg/kg	FA in mg/100gm	TA in mg/100gm	PA in mg/100gm	UI
Vehicle control	1% CMC	1.5±0.17	12.5±0.06	1800±0.0672	4.5+
PEAS	100++	1.5±0.17 (0)	10.02±0.025 (19.84)	1450.57±0.0921 (19.413)	4.0+ (11.11)
PEAS	200++	1.3±0.02 (13.33)	8.08±0.056 (35.36)	1475.89±0.0092 (18.007)	2.1 (53.34)
PEAS	400++	0.80±0.03 ** (46.66)	4.08±0.069 * (67.36)	1479.26±0.0821 ** (17.819)	0 (100)
CEAS	400+	1.4±0.025 6.6)	12.4±0.032 (0.8)	1790.05±0.2569 (0.552)	4.4 (2.2)
MEAS	400+	1.3±0.053 (13.33)	12.3±0.062 (1.6)	1788.09±0.0321 (0.662)	4.4 (2.2)
AEAS	400+	1.4±0.069 (6.6)	12.35±0.029 (1.2)	1791.91±0.0692 (0.449)	4.3 (4.5)
Ranitidine	5mg/kg	0.34±0.17 *** (77.33)	3.5±0.72 *** (72)	1365.25±0.1852 (24.153)	0 (100)

PEAS –Petroleum ether extract of *Analgium salvifolium root*

CEAS – Chlorororm extract of *Analgium salvifolium root*

MEAS – Methanolic extract of *Analgium salvifolium*

AEAS - Aqueous extract of *Analgium salvifolium*

FA – Free acidity,TA – Total acidity,PA – Peptic activity,UI - Ulcer index

n=6,value expressed as mean+SD.

One way ANOVA followed by Dunnet's t-test.

* : P<O.05 ** : P<sO.01, ***: P<0.001 .

Value in ( ) represents percentage in reduction

+ - indicate two shay rats were used

++ indicates six shay rats were used

3.RESULTS AND DISCUSSION:

Results are interpreted in the table and shown in figure. Ranitidine significantly reduced total acidity, free acidity, peptic activity and ulcer index by 72%, 77.33%,24.153%,100% respectively. In case of preliminary study with 400mg/kg body weight dose of chloroform, methanol, aqueous extracts of roots of *Alangium salvifolium* didn't shown any remarkable inhibition of free acidity, total acidity, peptic activity and ulcer index. The petroleum ether extract at dose of 100,200,400mg/kg body weight reduced the total acidity, free acidity, peptic activity and ulcer index dose dependently. Ulceration was inhibited 11.11%, 53.34%,

100% by 100, 200, 400mg/kg respectively in petroleum ether extract of *Alangium salvifolium.* Similarly the free acidity was reduced by 0%, 13.33%, 46.66% respectively. The total acidity was reduced by 19.84%, 35.36%, 67.36% respectively by 100, 200, 400mg/kg of petroleum ether extract of leaves of *Alangium salvifolium* respectively. The peptic activity was reduced by 19.413%, 18.007%, 17.819% by100, 200, 400mg/kg of petroleum ether extract of roots of *Alangium salvifolium.* On the basis of observations it was confirmed that the active principle present in petroleum ether extract of *Alangium salvifolium* is responsible for reducing total acidity, free acidity, peptic activity and ulcer index consequent upon which the ulcer indices were dose dependently reduced by these active constituents. The active constituents present in 400mg/kg of petroleum ether extract of leaves of *Alangium salvifolium* completely inhibited the ulceration & gives protection as given by 5mg/kg body weight of ranitidine in shay rat (Panda and Panda, 1992).

4.CONCLUSION:

It was found that the dose is safe up to 4gm/kg body weight in case of all extracts. Studies are under progressed to isolate the active constituent present in petroleum ether extract & those active constituent will be tested for their antiulcer activity in further studies.

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