

ANTIULCER ACTIVITY OF *IXORA PAVETTA*SRINIVAS K¹, CELESTIN BABOO R.V.^{2*}

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Received: 09 March 2011, Revised and Accepted: 23 March 2011

ABSTRACT

The flowers of *Ixora pavetta* have been extracted by ethanol and evaluated for the antiulcer activity by Aspirin induced and pylorus ligation of rats. The extract significantly decreased the gastric secretion, free acidity as well as gastric ulcers in the aspirin induced and pylorus ligated rats and the effects were compared with Omeprazole

Keywords: Antiulcer, *Ixora pavetta*, Omeprazole

INTRODUCTION

A localised loss of gastric as well as duodenal mucosa leads to the formation of peptic ulcer. It arises when the normal mucosal defensive factors such as mucus, mucosal blood flow, formation of HCO₃⁻ and PGE₂ are impaired or over powered. Also by the aggressive factors includes acid, pepsin, NSAIDS and helicobacter pylori. A number of drugs are available for the treatment of peptic ulcer but its clinical evaluation shows the incidence of relapses, side effects and drug interactions. This has been the rationale for the development of new antiulcer drugs and search for novel molecules. Plants have been an invaluable source of therapeutic agents to treat the various disorders including peptic ulcer disease. A new molecule from a folklore medicinal plant possessing fewer side effect and safer approach for the treatment of peptic ulcer is the object of the present study.

MATERIALS AND METHODS

Plant

Ixora pavetta belongs to the family Rubiaceae was selected for the study. It is a small tree or ever green shrubs, found in deciduous slopes and hills. The plant have been traditionally used for the treatment of urinary disorders, hepatoprotective, dysentery ulcers etc.¹ The flowers of the plant were collected during February 2010 from Marthandam Tamilnadu and authenticated by V.Chelladurai Research officer-Botany Tirunelveli, Tamilnadu.

Extraction

The collected flowers were dried under shade and powdered. The coarse powder was extracted with ethanol using cold percolation method².

Acute toxicity study

It was carried out as per the OECD guidelines 420. The animals were administered orally with the different doses of extract. The female albino mice weighing 20-30 g were used for the study. The animals were continuously observed for the autonomic and behavioural changes for 12hrs and the mortality was observed for 24 hours³. No mortality was found even at 2000 mg/Kg. The dose of 200mg/Kg, p.o. was selected for the further activity.

Antiulcer activity

Healthy Wistar albino rats weighing 180-220g were used for the study. The animals were housed in cages under standard conditions of 12 hour light and 12 hour dark cycle at 25±2°C. They were fed

with standard diet and water ad libitum. After one week of acclimatization the animals were used for the experiments. The animal experiments were carried out as per CPCSEA guidelines. The experimental protocol was approved by Institutional animal ethics committee (IAEC).

The anti ulcer activity was evaluated in aspirin induced pylorus ligated rats. The animals were divided into four groups of six animals each. They were fasted for 24 hours prior to the experiment and care was taken to avoid caprophagy. The animals were treated according to the experimental design of Table 1.

All the rats were treated with aspirin (200mg /Kg) after 30 minutes of drug treatment. The animals were subjected to fasting for 18 hours after three days of drug treatment. Pyloric ligation was made after fasting. The rats were sacrificed four hours later by cervical dislocation and the esophagi were clamped, the stomach was exposed carefully, opened along the greater curvature, the luminal contents were removed, the total volume of gastric secretion and total acidity were estimated by titration method. The ulcer index was calculated according to the method of Gangly and Bhatnagar^{4&5}, the lesions were counted with the aid of hand lens (10x) and each gives a severity rating as follows.

Ulcer score	Descriptive /observation
0	Normal coloured stomach
0.5	Red colouration
1.0	Spot ulcers
1.5	Haemorrhagic streak
2.0	Ulcers
3.0	Perforation

Mean ulcer score for each animal was expressed as ulcer index. The percentage of ulcer inhibition was determined as follows

$$\% \text{ Ulcer protection} = \frac{\text{Control mean ulcer index} - \text{test mean ulcer index}}{\text{Control mean ulcer index}} \times 100$$

The values were expressed as MEAN ± SEM and found out by using one way ANOVA followed by Newman kevel's multiple range test. The probability value < p.0.01 was considered significant.

Table 1: Experimental design

Group no	Treatment	Drug	Dose
I	Normal control	CMC 1%	1ml
II	Ulcer control	Aspirin	200 mg/Kg

III	Standard control	Omeprazole	2 mg/Kg
IV	Sample	Ethanollic extract	200 mg/Kg

Table 2: Antiulcer Activity of ethanolic extracts of *Ixora pavetta*

Group	Treatment	Dose mg/kg	Total volume of gastric secretion (ml/100 gm)		Total acidity (meq/l/100g)		PH	Ulcer score	% protection
I	Normal control	1 ml of 1%cmc	4.1±	0.62	412.35±	22.12	2.4± 0.33	0.3± 0.01	0.000
II	Ulcer control	200mg/kg ASA	5.4±	1.02 ^a	512.22± ^a	34.33	1.5± ^a 0.26	2.2± ^a 0.45	0.000
III	Standard control	2mg/kg omeprazole	2.4±	0.36	322.68±	17.18	3.9± 0.60	0.5± 0.12	77.30
IV	Treatment control EEIC	200mg/kg of EEIC	3.6±	0.45 ^b	395.6± ^b	21.30	2.9± ^b 0.45	0.7± ^b 0.24	68.20

*Values are expressed as Mean± SEM

*a - Values are significantly different from Normal control group at P<0.01

*b -- Values are significantly different from ulcer control group at P<0.01

RESULTS AND DISCUSSION

Table 2 summarises the results obtained in the experimental model of aspirin induced pylorus ligation in rats. The ethanol extract of *Ixora pavetta* was found to possess remarkable ulcer protection of 68.2% at 200mg/Kg and standard drug omeprazole at 77.3%. Administration of 200 mg/Kg of aspirin suspension consistently caused hemorrhagic lesions in the mucosa of the glandular stomach, indicating true ulcer formation as stated in histological findings. Pre-treatment of rats with ethanolic extract of *Ixora pavetta* prevented gastric ulcerogenesis significantly. But it is seemed to be less efficient than standard drug like omeprazole. The result of the present study substantiates the traditional claim that the flowers of *Ixora pavetta* possess antiulcer activity.

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