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EVALUATION OF ANTIULCER ACTIVITY OF *ACACIA FERNISIANA* (L.) BARK IN RATS

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ABSTRACT

Ethanolic extract of Acacia fernisiana was evaluated for its antiulcer activity against pyloric ligation induced ulcer in Wister rats.The ethanolic extract of Acacia fernisiana at the dose rate400mg/kg and 200 mg/kg per orally exhibited significant protection against pyloric ligation induced gastric ulceration .The present investigation revealed that Acacia fernisiana exhibited significant antiulcer activity by enhancing potential of gastric mucosa thereby reducing mucosal damage.

Keywords: Antiulcer activity, Herbal Drug, Pyloric ligation induced gastric ulceration.

INTRODUCTION:

Peptic ulcer is a conglomerate of heterogenous disorders which manifests itself as a break in the lining of the gastrointestinal mucosa bathed by acid or pepsin. NSAIDS ingestion is associated with erosions, gastritis, ulceration, interference with ulcer healing, Ulcer complications and injury to the small and large intestine15.Although a number of antiulcer drugs such as H2 receptor antagonists, proton pump inhibitors and cyto protectants are available for ulceration, but all these drugs have side effects and limitations. Herbal medicine considered safer because of the natural ingredients with no side effects6. In India, Acacia farnesiana (aroma) is known as Mullatumma, Kampatumma in local area and it is commonly known as Aroma and sweet acacia also. Grown throughout India, and often planted in gardens 12. The bark of this plant is used as astringent and demulcent. The leaves and roots are used for medicinal purposes. Woody branches used in India as tooth brushes. The gummy roots also chewed for sore throat5.The flower infusion of this plant used as a stomachic13. The root decoction has been suggested as a folk remedy for tuberculosis. The decoction of the root, used in hot baths, is said to help stomach cancer. A plaster, made from the pulp, is said to alleviate tumors12. Some recent reports have indicated that many flavonoids possess antiulcerogenic activity. Oral treatment with the ether fraction of the flavonoid extract demonstrated a good level of gastric protection. Mucous content was increased and accompanied by proportionate increase in proteins and hexosamines3. Quercetin, kaempferol, morin, myricetin and rutin when tested were found to inhibit the mucosal content of platelet activating factor (PAF) in a dose dependent manner suggesting that the protective role of these substances may be mediated by

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endogenous PAF14. Flavonoids exhibit several biological effects such as anti inflammatory, anti hepatotoxic and antiulcer actions4.The aim of our study was to investigate the Antiulcer activity of Ethanolic extract by pyloric ligation induced ulcer model.

MATERIALS AND METHODS

Plant Materials

The Bark ofAcacia fernisiana were collected from local area of Tirupati and Chittoor district of Andhra Pradesh in the month of July - October and identified by Dr. K. MadhavaChetty, Herbarium Keeper, Department of Botany, S.V.University and Tirupati.

Preparation of Extract:

The Bark of Acacia fernisiana was powdered coarsely by using Hammer mill and was extracted with n-Hexane, Chloroform, Ethyl acetate and Ethanol successively by Soxhlation method and concentrated over water bath and evaporated under reduced pressure. The Ethanolic extract was chosen for Anti ulcer activity.

Chemicals:

N-Hexane, Chloroform, Ethanol, Ranitidine

Experimental procedure:

Pyloric Ligation Induced Ulcer Model

Before going for pyloric ligation the animals were anaesthetized with Diethyl ether before the surgical procedure. The dorsal surface of each rat was shaved with a sterile surgical blade under all aseptic measures and skin was cleaned with 70% ethanol.

Pyloric ligation method1in this method albino rats were fasted in individual cages for 24 h. Care was being taken to avoid coprophagy. Reference/ standard drug, test & control vehicle was administered 30 min prior to pyloric ligation. Under light ether anesthesia, the abdomen was opened and the pylorus was ligated.1In this method albino rats were fasted in individual cages for 24 h. Care was being taken to avoid coprophagy. Reference/ standard drug (Ranitidine 20mg/kg body wt.), test & control vehicle was administered 30 min prior to pyloric ligation. Under light ether anesthesia, the abdomen was cut open through a midline incision. The pylorus was secured and ligated with silk sutures, after which the wound was closed and the animal were allowed to recover from anesthesia. After ligation of the pylorus, drinking water was withheld and the gastric examinations were under-taken 4 hours after pylorus ligation2. The animals were sacrificed with an over dose of ether and the stomachs were removed after clamping the esophagus. The gastric contents were collected through the esophagus. The gastric juice was centrifuged and volume was recorded.

Table 1. Results of antiulcer activity

S.No	Groups	Numbering	scoring	Incidence (%)	ulcer index	Ulcer inhibition (%)	Numbering
1.	Control Distilled Water - 3ml	5.25	2.00	100	17.2	-	5.25
2.	Standard *Ranitidine* -20mg	3.25	1.00	62.5	10.5	39.1	3.25
3.	Test-I EAFB-200mg	3.37	1.38	87.5	13.5	21.8	3.37
4.	Test- II EAFB -400mg	3.90	1.25	75.0	12.6	26.6	3.90

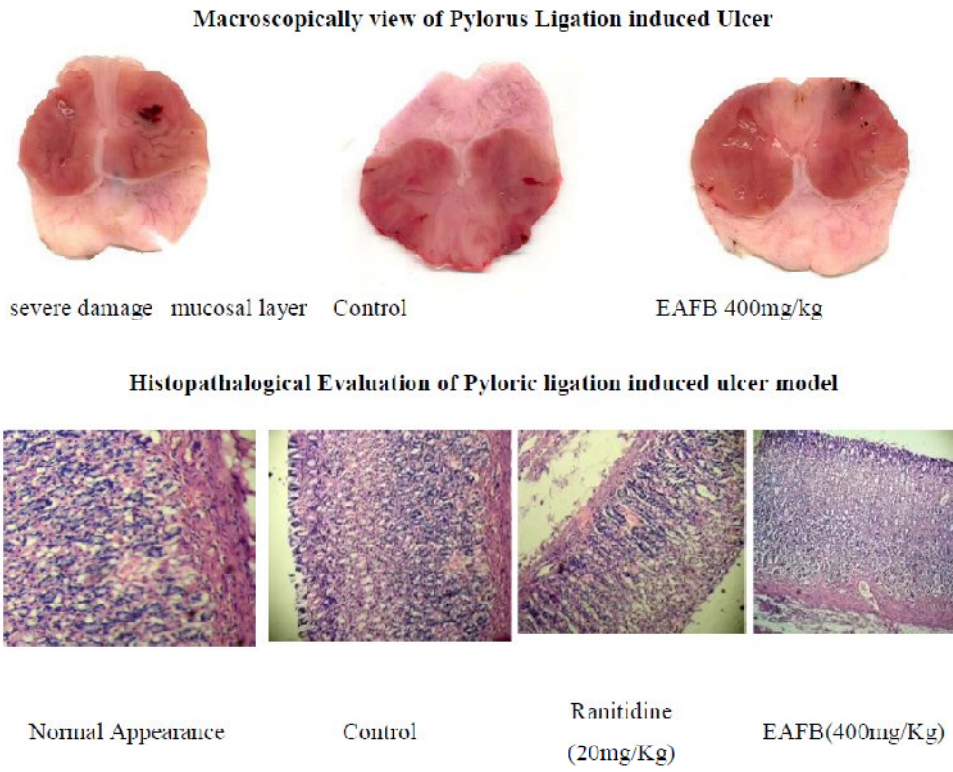

Figure 1. Histopathological features of stomach

Macroscopic evaluation of stomach

The stomachs were opened along the greater curvature, rinsed with saline to remove gastric contents and blood clots and examined by a ×5 magnifier lens to assess the formation of ulcer. The number of ulcers was counted. Ulcer scoring was under taken according to Vogel et al.3, 4Scoring of ulcer will be made as follows. Normal stomach (0), Red coloration (0.5), Spot ulcer (1), Hemorrhagic streak (1.5), Ulcers. (2) Perforation. (3).Ulcer index was measured by using following formula according to Vogel et al.

UI = UN + US + UP × 10-1

Which UI = ulcer index, UN = mean of ulcer number,US =mean of ulcer score,UP = ulcer probability (incidence %) for each group. The n-Hexane, Chloroform and Ethanol extracts were subjected to Thin Layer Chromatography using TLC plates (0.1 mm thick silica gel) eluted with n-hexane: Ethyl acetate (8:2) and chloroform :benzene (9:1) respectively. The spots were identified under long UV light by using UV cabinet

RESULTS AND DISCUSSION:

Traditionally medicinal plants have been used in folk medicine throughout the world to treat various diseases, especially ulcers. We evaluated preventive effects of ethanolic extract of Bark of Acacia fernisiana(L.) using Pyloric Ligation Induced Ulcer Model.

CONCLUSION:

This study reveals significant Antiulcer effect of ethanol extract from bark of Acacia fernisiana. The extract at dose of 400mg/kg showed significant activity when compared with standard Ranitidine. Further studies using more specific methods are required to explore the constituents responsible for the activity and the mechanism of this activity which might prove important and improved therapies for the treatment and prevention of ulcer.

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