ANTI ULCER ACTIVITY OF THE BARK OF *Artocarpus hirsutus* Lam.

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ABSTRACT: The plant *Artocarpus hirsutus* Lam. (wild jack) belonging the family Moraceae. The outer colour of bark is grey and inner colour is brown. The leaves are elliptic rhomboid or ovate and dark green in colour. The main property and uses of unripe fruits are astringent, sweet, thermogenic, aphrodisiac. An infusion of bark is applied to cure small pimples and cracks on the skin. Powdered bark is used to heal sores. Dry leaves are useful in treating buboes and hydrocele. For over viewing medicinal properties of plant, my effort was to study the anti ulcer activity of the bark of ethanolic extract of *Artocarpus hirsutus* Lam. It protects experimental animals from gastric ulceration induced by pylorus ligation. The test sample reduced gastric secretory volume, acidity and ulceration of pylorus ligated rats.

KEYWORDS: - Anti ulcer activity, pylorus ligated rats, *Artocarpus hirsutus* Lam.

1. INTRODUCTION

Medicinal plants continue to be an important therapeutic aid for alleviating ailments of human kind. Search for eternal health and longevity and to seek remedy to relieve pain and discomfort prompted the early man to explore his immediate natural surrounding and trade many plants, animal products and minerals and developed a variety of therapeutic agents (1). Ulcers are crater-like sores (generally 1/4 inch to 3/4 inch in diameter, but sometimes 1 to 2 inches in diameter) which may occur in the lining of the stomach (called gastric ulcers), just below the stomach at the beginning of the small intestine in the duodenum (called duodenal ulcers) or less commonly in the esophagus (called esophageal ulcers). In general, ulcers in the stomach and duodenum are referred to as peptic ulcers (2). An infusion of bark is applied to cure small pimples and cracks on the skin. Powdered bark is used to heal sores (3). The various species of *Artocarpus* has anti ulcer activity. Very less pharmacological studies were carried out on the bark of *Artocarpus hirsutus* Lam. The present study decided to do the antiulcer activity of ethanolic extract of *Artocarpus hirsutus* Lam.

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2. MATERIALS AND METHODS

2.1. Collection

The Plant *Artocarpus hirsutus* Lam. belonging to the family "Moraceae" were collected from Kollam District of Kerala.

2.2. Taxonomical Identification

The plant was identified by Dr. P. Jayaraman, Botanist, Plant Anatomy Research Centre (PARC), West Tambaram, Chennai.

2.3. Treatment

The bark were collected and washed with water and dried. It is dried in sunlight for one hour and then it was dried in shade. It is then powered. Then the powder was passed through sieve no.60. The coarse fraction was subjected for extraction.

2.4. Extraction

The powdered drug extracted separately in a soxhlet apparatus and extracted with 750 ml of 70% ethanol until the colour of siphon changes, the extracts were filtered, cooled and concentrated under pressure in a rotary evaporator to a syrupy consistency followed

by drying using a freeze dryer. The extract was stored in air-tight container.

2.5. Antiulcer Activity

Albino rats of either sex weighing about 100-130 gm were divided into groups of six each. Pregnancy was excluded. The animals were deprived of food for 24hours before the commencement of the experiments, but water was allowed at water ad libitum. The drugs were given orally 2 hours prior to pylorus ligation which was carried out according to the technique of Shay et.al (1945)(4).

Test drug

Group I - Normal - 5 ml /kg (5%w/v Acacia)

Group II - Pylorus control - 5 mg / kg

Group III - Ethanol extract - 300 mg / kg

Group IV - Ranitidine - 20mg / kg

5% w/v Acacia mucilage was used as a vehicle at a dose of 5ml/kg of body weight the solvents control received equal volume of acacia mucilage. The animals were sacrificed 6 hours after pylorus ligation for observation of gastric lesions as described by Gupta *et. al* (1985)(5).

The gastric juices were collected, centrifuged and its pH and volume were measured. Free and total acidity were estimated titrimetrically with 0.01N NaOH using methyl orange and phenolphthalein as indicator.

Pipette 1ml of filtered gastric contents into a small beaker, add two to three drops of methyl orange and titrated with 0.01N NaOH, until all trace of the red colour disappears and the colour is yellowish orange. Note the volume of alkali added. Then add 2-3 drops of phenolphthalein and continue titration until a definite red tinge reappears. Again read the burette and so obtain total volume of alkali added. If a yellow colour is obtained on adding methyl orange no free acid is present. Add phenolphthalein and titrate the combined acid. This then equals the total acid. The data concerning the pH, volume, acid secretion of gastric juice and ulcer index were analyzed by students‘t` test (6,7).

Total Acidity- A volume of 2ml diluted gastric juices was titrated with 0.01N NaOH run from a micro burette using phenolphthalein as indicator and the acidity was expressed as mg. HCl/100gm body weight of rat.

Free Acidity – It is determined in the similar manner using topfer’s reagent as indicator and NaOH was run until canary yellow colour was observed.

The ulcer index was determined using the formula:

$$\text{Ulcer index} = 10 / X^{76}$$

Where X = Total mucosal area/Total ulcerated area.

Based on their intensity, the ulcers given scores as follows:
0 = Number of ulcer, 1 = Superficial mucosal erosion, 2 = Deep ulcer or Transmural necrosis, 3 = Perforated or Penetrated ulcer (8).

3. RESULTS AND DISCUSSION

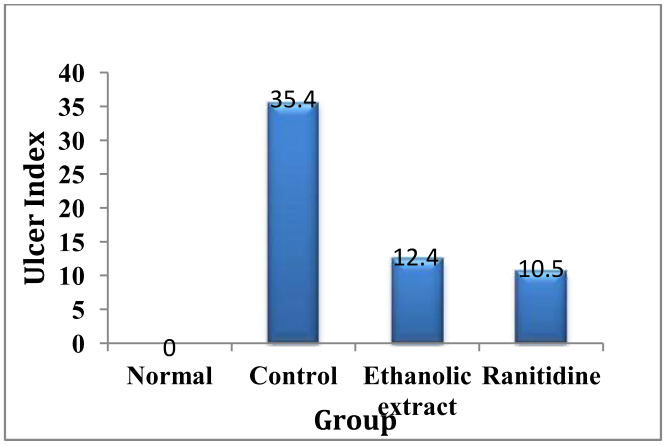

Figure 1. Ulcer index of various groups

The effect of test sample (300 mg/kg) and Ranitidine (20 mg/kg) on gastric secretary volume, pH, total and free acidity and gastric ulcer were shown in Table 1. The test sample (300 mg/kg) was found to be effective in selected dosage level and produced significant effect when compared with the control.

Table 1 Anti ulcer activity of ethanolic extract of *Artocarpus hirsutus* Lam

Group	Volume of gastric juice	pH	Total acidity	Free acidity	Ulcer index
Normal	0.39±0.13	4.89±0.92	23.50±0.68	15.10±0.94	Nil
Control	1.80±0.04	1.30±0.07	98.00±7.30	77.00±6.30	35.40±3.20
Et-OHextract (300mg/kg)	1.60±0.00*	3.20±0.02*	56.00±1.80*	29.00±0.06*	12.40±0.06*
Ranitidine (20mg/kg)	0.05±0.02*	4.10±0.14*	29.00±1.00*	16.00±0.09*	10.50±0.08*

All values determined were mean± Standard deviation;*P>0.01 when compared with standard.

4. CONCLUSION

Ranitidine antagonized pentagastrin, histamine and carbachol induced hyper acidity in gastric fistula rats. It protects experimental animals from gastric ulceration induced by stress, pylorus ligation, aspirin and related compounds. The test sample reduced gastric secretory volume, acidity and ulceration of pylorus ligated rats.

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