

PHYTOCHEMICAL AND ANTI ULCER ACTIVITY OF AQUEOUS EXTRACT OF *MORINDA CITRIFOLIA* FRUIT IN RATS

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ABSTRACT

Morinda citrifolia (Rubiaceae) is a medicinal plant traditionally used to treat various ailments, including ulcers. In order to establish pharmacological properties of the fruit of *Morinda citrifolia* studies were performed on antiulcer activity of the plant's aqueous extract and phytochemical studies were tested for the presence of various chemical constituents.

Keywords: *Morinda citrifolia* fruit, pylorus ligation, anti-ulcer activity, phytochemicals.

INTRODUCTION

Peptic ulcers that don't heal with treatment are called refractory ulcers and may require surgery. Surgical procedures may involve a vagotomy. Common reasons why ulcers fail to heal include: not taking medications according to directions leads to adverse reactions, antibiotic resistant *H. pylori* population, and patient's use of tobacco or pain relievers that increase the risk of ulcers. Less often, refractory ulcers may be a result of extreme overproduction of stomach acid. so many plants having anti ulcer activity. *Morinda citrifolia* known commercially as noni, widely throughout the pacific and one of the most significant sources of traditional medicines among pacific island societies belonging to Rubiaceae. also called as surangi in gujarati. it can grown up to 9m long and has large, simple, dark green, shiny and veined leaves.

EXPERIMENTAL SECTION

Collection of Plant Material from different parts of South India and its Authentication was done. Aqueous Extracts of *Morinda citrifolia* was procured from Mithali Herbal Extracts Vijayawada Andhra Pradesh INDIA. Aqueous Extract and Crude dried powder of fruit of *Morinda citrifolia* is screened for Phytochemical and Antiulcer activity on Rats by using Pylorus ligation induced ulcer models.

Phytochemical investigation of *Morinda citrifolia* fruit Extract and Powder

Phytochemical tests were carried out to find the presence of chemical constituents in crude dried powder.

Alkaloids, Carbohydrates, Proteins, Flavanoids, Glycosides, Fats, Steroids, Triterpenoids and Tannins were tested in fruit powder and extract

of *Morinda citrifolia* according to the standard procedures.

Animals: Wister albino rats weighing between 150-200g were maintained under standard laboratory condition on 12-day/night cycle with free access to food and water being ad libitum. The animals were acclimatized to laboratory condition prior to experimentation. The animals were drawn at random for the study. All the experiments were performed according to current guidelines for the care of the laboratory animals and the ethical guidelines.

Evaluation of Antiulcer Activity of Aqueous Extract of *Morinda citrifolia* Fruit

Experimental design

All the animals are fastened prior to all assess and were allocated to different experimental groups each of 6 rats. Moreover the animals were kept in specially constructed cages to prevent coprophagia during the experiment. All the experiments carried out according to the guidelines for care and use of experimental animals and approved by CPCSEA and IAEC.

Acute oral Toxicity study of Aqueous Extract of fruit of *Morinda citrifolia*

The Wistar rats treated with aqueous extract of *Morinda citrifolia* did not show any behavioral changes, toxic reaction or mortality up to 5000 mg/kg treatment. It was found to be safe at the dose of 5000 mg/kg. Therefore, LD50 of the aqueous extract of *M. citrifolia* was found to be >5000 mg/kg.

Pylorus ligation method

The animals were divided in to 4 groups of 6 animals each has mentioned above

Group 1: Received Normal Saline

Group 2: Received 40mg/kg of Ranitidine as standard

Group 3: Received 200mg/kg of Aqueous Extract of *Morinda citrifolia* fruit

Group 4: Received 300mg/kg of Aqueous Extract of *Morinda citrifolia* fruit

Animals in all the groups are fastened for 12 hours after the respective assigned treatment and were anaesthetized with anaesthetic ether of abdomen was opened by a small incision below the xepoid process and pylorus portion of stomach was lifted out and ligated. Precautions was taken to avoid fraction to the blood supply. The stomach was sutured with interrupted sutures. The animals were allowed to recover and stabilize in individual cages and were deprived of water during the post operative period. Four hours after the Pylorus ligation, the animals were sacrificed by an excess dose of ether and the stomach was carefully removed and gastric contents were collected. The gastric juice was centrifuged at 1000 rpm and the supernatant is separated and volume of gastric juice as well pH of gastric juice was measured. Then the gastric juice was subjected to biochemical estimation as follows. Total acidity, free acidity Ulcer index Hexose content Hexosamine content.

STATISTICAL STUDIES

The data obtained by various parameters were statistically evaluated by one way analysis of variance (ANOVA) followed by Dunnett's T test using graph pad prism software (Trial version). The mean values of \pm SEM calculated for each parameter.

In this AFMC treated animals shown greater carbohydrate content/food content in the sample which is determined by Spectroscopic and colorimetric methods. The table 1 are shown above for all the parameters as mentioned above Effect of Aqueous fruit extract of *Morinda citrifolia* on Pylorus ligation induced ulcer in rats

Table 1: Antiulcer Activity of Aqueous Extract of fruit of *Morinda citrifolia*

Group	Dose	Ulcer index	%Protection	Free acidity (mEq/L)	Total acidity (mEq/L)	Volume of gastric juice (ml)	pH of gastric juice	Hexose conc	Hexosamine conc
Normal	---	--	----	40.5 \pm 2.87	50.4 \pm 4.42	50.4 \pm 4.42	50.4 \pm 4.42	0.11 \pm 4.21	0.13 \pm 3.37
Control	--	4.65 \pm 0.42	-----	40.5 \pm 2.87	50.4 \pm 4.42	50.4 \pm 4.42	50.4 \pm 4.42	0.28 \pm 4.65	0.32 \pm 2.94
Ranitidine	40mg/kg	1.02 \pm .25*	78.05	5.01 \pm 1.06**	13.1 \pm 1.07**	3.15 \pm 0.06*	3.68 \pm 0.21**	0.47 \pm .18	0.061 \pm .67
Aqueous extract of <i>Morinda citrifolia</i>	200mg/kg	1.15 \pm 0.5*	75.28	18.022 \pm 1.67**	20.0 \pm 2.14**	2.98 \pm 0.2	2.20 \pm 0.07**	0.56 \pm .015	0.059 \pm .075

Values are mean \pm S.E.M. (n = 6), P* < 0.01 P** < 0.05 when compared to control group

RESULTS AND DISCUSSION

The Indian systems of medicine *Morinda citrifolia* were used –fruits laxative, hypertension, boils and carbuncles, stomach ulcers, toothaches, sore throat, cuts and wounds; abscesses; mouth and gum infections, tuberculosis, sprains, deep bruising, rheumatism. It also used in various tribal areas for fever, eye problems, skin disorder, gums and throat complaints, gout, asthma, urinary disorders and menstrual cramps. But pharmacological scientific evidence for its antiulcer activity Peptic ulcer disease is a very common global health problem today. Peptic ulcer is a lesion of gastric or duodenal mucosa. Duodenal ulcers are more common in adult males. Gastric ulcers occur commonly at old age and in lower socio-economic class of individuals. Although the exact cause of ulceration is not known, hydrochloric acid and pepsin are responsible for maintaining the lesion once it is produced. Peptic ulceration occurs only in areas which are bathed by the acidic gastric juice. Therefore, the term peptic ulcer refers to ulceration of the areas which might be acted upon by acid peptic juice namely the stomach and the first portion of duodenum yet to be proved or not yet proved shown based on above literature. It can be evaluated for antiulcer activity of *Morinda citrifolia* fruit extract in Pylorus ligation model.

CONCLUSION

The present study was an attempt to investigate to determine antiulcer activity using pylorus ligation induced ulcers. The animal ulcers induced with pylorus ligation and the animals were treated with AFMC after pylorus ligation. After 4 hours the animals were sacrificed and the pH of the gastric fluid, volume of gastric juice, total acidity and free acidity, carbohydrate content like hexose and hexosamine were measured which shown significant activity.

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