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EVALUATION OF ETHANOLIC EXTRACT OF SEEDS OF *MACUNA PRURIENS* FOR ITS ANTIULCER ACTIVITY

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ABSTRACT
The present study is on ethanolic seed extract of Macuna pruriens (Family: Fabaceae) in gastric ulcer with pyloric ligated rat model. The effect produced was compared with the Ranitidine (38 mg/kg., p.o) showed significant reduction ($p<0.01$) in ulcer index, gastric volume, free acidity, total acidity and significant ($p<0.01$) increase in gastric pH and ulcer protection. Ethanolic seed extract of Macuna pruriens also showing antioxidant property by significant reduction ($p<0.05$) in LPO and significant increase ($p<0.05$) in catalase and nitrite ($p<0.01$).

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INTRODUCTION

Peptic ulcer is the most common gastrointestinal disorder in clinical practice. Considering the several side effects of modern medicine indigenous drugs possessing fewer side effects should be looked for as a better alternative for the treatment of peptic ulcer. Generally plant seeds have been found to be effective against ulcer in experimental animals and exhibit several biological effects. The *Macuna pruriens* seeds has been claimed to have antiulcer property, but no scientific study was carried out to define this activity. Thus the present investigation sets out to study the antiulcer activity of *Macuna pruriens* seed extract.

MATERIALS AND METHODS:

Plant material collection: Fresh seeds of *Macuna pruriens* was collected shade dried and the powder was prepared.

Preparation of ethanolic extract of plant: Ethanolic extract was prepared by soxhalation[1]. The yield obtained was 4.23gm.

Preliminary Phytochemical screening[2]: It was performed for

- Flavonoids-Alkaline reagent test
- Saponins-Aqueous test
- Alkaloids-Dragendorff's test
- Steroids-Libermann-Burchard test

Experimental animals: Adult female *albino* rats of wistar strain weighing about 150-200gm were used in present study. The animals were housed in clean, sterile polypropylene cages in a well ventilated room under hygienic conditions and

were exposed to 12 h day and night cycle. The animals were fed with commercial rat pellet feed (Gold mohur) and were given water *ad libitum*. Experimental studies were conducted according to the Institutional animal ethical committee(IAEC).

Acute toxicity studies: Acute toxicity studies were performed according to OECD guidelines[3], and found that up to 2000mg/kg p.o route found to be safe.

Pylorus ligation model:

Gastric ulcers were induced by pylorus ligation model[4],here animals are divided into five groups(n=5).Group I receives no treatment, serves as normal animals. Group II received vehicle (distilled water 2ml/animal) that serves as vehicle control. Group III received standard drug ranitidine (38mg/kg., p.o) one hour prior to pylorus ligation. Group IV received ethanolic extract of *Macuna pruriens* , EMP-1 (100mg/kg., p.o) and GroupV received EMP-2 (200mg/kg., p.o). At the end of treatment schedule, the animals of all groups were starved for 48hrs with free access of drinking water. Under light ether anesthesia, the pylorus was ligated, 19 hr later the ligated rats were sacrificed by decapitation. The stomach was opened along the greater curvature. The contents were drained into a centrifuge and centrifuged at 2000rpm, 3 min for accessing parameters like, gastric pH[5], acid volume[6], total acidity[7], free acidity[7], ulcer index[8]. The stomach was thoroughly washed under running tap water and pinned onto a cork plate. The number of ulcers and severity was scored. The stomachs were removed and antioxidant parameters like lipid peroxidation, catalase, nitrite was assessed in all groups.

***In vivo* antioxidant studies:** The post mitochondrial supernatant (PMS)[9] was prepared which was used to assay the *in vivo* antioxidant parameters like Lipid peroxidation [10], Catalase[11], Nitrite[12].

RESULTS:

Table1

Groups	Treatment	Ulcer index	Protection (%)	pH of gastric juice (ml)	Gastric juice (ml)	Free acidity (mEq/l)	Total acidity (mEq/l)
I	Control	6.7±0.10	-	1.42±0.08	2.2±0.10	27.25±0.85	47.5±0.64
II	Ranitidine(38mg/kg.,p.o)	2.1±0.09*	69	5.35±0.06*	3.42±0.04*	12.5±0.64*	24.5±0.64*
III	EMP-I (100mg/kg.,p.o)	2.4±0.08*	64	5.90±0.03*	2.36±0.13*	14.37±0.57*	29.52±0.62*
IV	EMP-2 (200mg/kg.,p.o))	1.9±0.09*	71	6.42±0.05*	1.65±0.12*	12.53±0.91*	24.13±0.38*

Values are expressed as Mean±SEM *p<0.01 considered statistically significant as compared with control group.

Table 2:

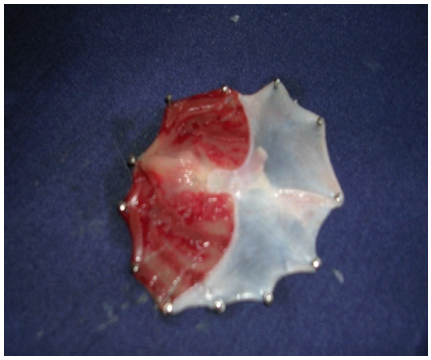
Group	LPO(µM/g tissue)	Catalase(µM/g tissue)	Nitrite(µM/g tissue)
I-Normal	0.028±0.02*	5.50±0.13*	45.34±0.93*
II- Control	0.045±0.03	3.05±0.15	31.67±0.50
III- Standard	0.031±0.04**	4.93±0.18*	42.94±1.38*
IV-EMP-1(100mg/kg.,p.o)	0.037±0.03[n]	3.96±0.70**	41.26±3.16*
V-EMP-2 (200mg/kg.,p.o)	0.033±0.11**	4.60±0.33**	43.86±1.26*

*p<0.01 when compared to control(II)

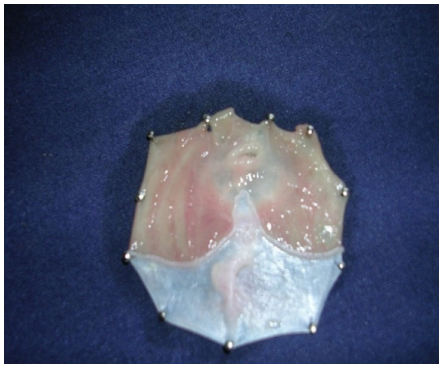
**p<0.05 when compared to control(II)

n= Non significant when compared to control(II)

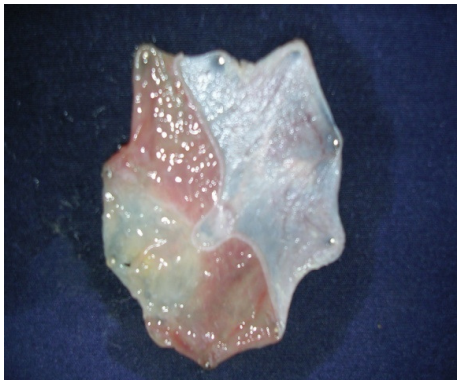
Effect of ethanolic extract of *Macuna pruriens* on pyloric ligated ulcer rats



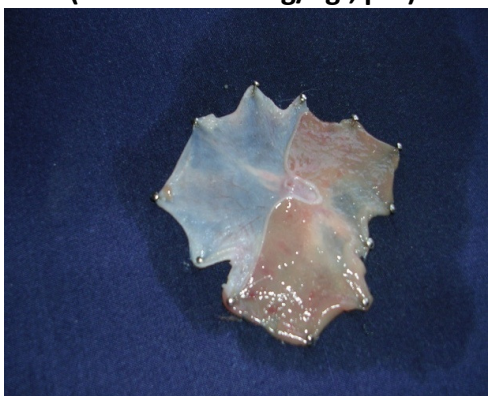
Group-I (Control) Group-II



(Ranitidine 38mg/kg., p.o)



Group- III (EMC 100mg/kg.,p.o)



Group-IV (EMC200mg/kg.,p.o)

DISCUSSION:

Pylorus ligation model is considerd as a potential tool to evaluate efficacy of new drugs against ulcers. Pyloric ligation induced ulcers are produced due to auto digestion of the gastric mucosa by gastric acid and breakdown of the gastric mucosal barrier. The preliminary phytochemical analysis of *macuna pruriens* extract showed the presence of flavonoids, saponins and alkaloids. Flavonoids are among the cyto protective materials for which antiulcerogenic efficacy has been extensively confirmed. There is significant increase in the gastric pH proves it's antacid property. Ethanolic extract of *Macuna pruriens* produced significant reduction in the ulcer index, ulcer score when compared to control. The antioxidant property of EMC was proved by its significant reduction in LPO, significant increase in catalase and nitrite when compared to control.

CONCLUSION:

In this study EMC provides significant antiulcer effect against ethanol gastric ulcers in rats. The antiulcer activity of extract was attributed to their flavonoid content and antioxidant property. The EMC showed significant reduction in the ulcer index, ulcer score when compared to control.

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