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ANTIULCER AND ANTIOXIDANT ACTIVITY OF ETHANOLIC EXTRACT OF *C.HIRSUTUS* AGAINST ETHANOL INDUCED GASTRIC ULCER IN ALBINO RATS

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ABSTRACT

The ethanolic extract of roots of *Cocculus hirsutus* has been useful of various ailments (Tuberculosis, leprosy, skin diseases, dyspepsia, pruritis etc.). To determine the gastroprotective effect of *Cocculus hirsutus* in model of ethanol induced ulcer rat, the ethanolic extract is given by oral gauges (100mg/kg) and (200mg/kg) half an hour prior to the administration of ethanol (1 ml of 96%).The antioxidant parameters were also determined in this model. *C.hirsutus treatment* significantly reduced the ulcer index, lipid peroxidation (LPO) and significant increase in catalase, nitrite , thereby justifying it's use as an anti ulcerogenic agent.

KEYWORDS: ***Cocculus hirsutus*, Ulcer index, Lipid peroxidation, Catalase, Nitrite**

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INTRODUCTION

Herbs have been used by all cultures throughout history. It was the integral part of the development of modern civilization. Gastric ulcer is due to imbalance between aggressive and defensive factors. Herbal medicine is the oldest form of health care known to mankind**.** Drug treatment of peptic ulcer is targeted at either counteracting aggressive factors or stimulating defensive factors. The goals of treating peptic ulcer disease are to relieve pain, healing of ulcers and prevent ulcer recurrence. Currently there is no fast effective treatment that meets all the goals. Hence efforts are on to find a suitable treatment from natural product sources.

MATERIALS AND METHODS

Plant material collection: Fresh roots of *Cocculus hirsutus* (*Menispermaceae*) were collected, shade dried and then powdered.

Preparation of ethanolic extract of plant: Ethanolic extract was prepared by soxhalation[1]. The yield obtained was 2.6gm.

Preliminary Phytochemical screening[2](Kokate et al.,): 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 12h 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.

Ethanol induced ulcer model [4]: All the animals were kept fasting for 16h and given water *ad libitum.* The animals were divided into four groups (n=5) Group-I controlled rats received 96% ethanol, Group-II Induced rat received standard drug. (Omeprazole 20mg/kg., p.o) Group-III Induced rats received low dose of ethanolic plant extract(EC-I) (100mg/kg.,p.o) Group-IV Induced rats received high dose of ethanolic plant extract(EC-II) (200mg/kg.,p.o) Half an hour later ethanol inducing the drug was administered. After 1 hr all the rats were sacrificed by cervical dislocation and stomachs were removed. The stomachs were then fixed in 10% formalin. It was opened along the greater curvature and observed for the lesions. Macroscopically ulcer score was detected and ulcer protection was calculated. The tissue was homogenized using phosphate buffer(pH 7) for 10min.The supernatant was collected and centrifuged at a speed of 2000rpm for 3min.Later antioxidant parameters like lipid peroxidation, catalase and nitrite were assessed in all the groups.

***In vivo* antioxidant studies:** The post mitochondrial supernatant(PMS)[5] was prepared which was used to assay the *in vivo* antioxidant parameters like Lipid peroxidation [6], Catalase[7], Nitrite[8].

RESULTS

Preliminary phytochemical screening. It has given the positive test for tannins, flavonoids and saponins.

Table 1
Effect of Ethanolic extract of C.hirsutus on ethanol induced model

Group	Treatment	Ulcer index	% Protection
I	Control	12.9 ± 1.08	-
II	Omeprazole (20mg/kg., p.o)	3.2 ± 1.108*	75
III	EC-I (100mg/kg., p.o)	5.1 ± 0.4787*	62
IV	EC-II (200mg/kg., p.o)	4.8 ± 0.6455*	68

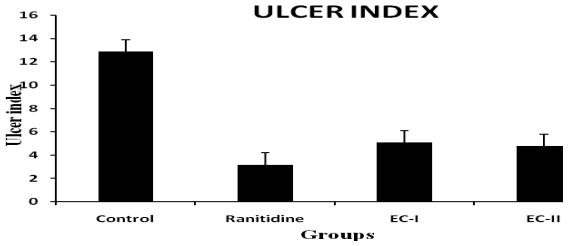
Values are expressed as Mean ± SEM
****p<0.01 considered statistically significant as compared with control group***

Table 2
Effect of EC on in vivo anti oxidant parameters on ethanol induced gastric ulcer

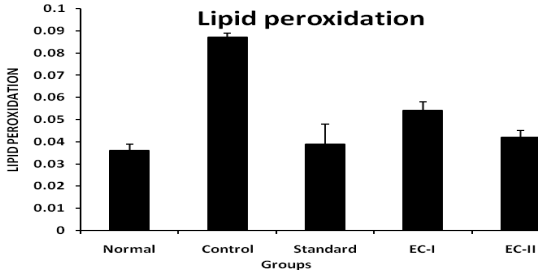
Group	LPO (µM/g tissue)	Catalase (µM/g tissue)	Nitrite (µM/g tissue)
I-Normal	0.036 ± 0.003*	8.37 ± 0.110*	83.21 ± 0.93*
II-Control	0.087 ± 0.002	3.20 ± 0.035	45.23 ± 0.50
III-Standard	0.039 ± 0.001*	6.40 ± 0.130*	72.53 ± 1.30*
IV-EC-I	0.054 ± 0.004*	5.20 ± 0.120*	61.45 ± 2.05*
V-EC-II	0.042 ± 0.003*	5.50 ± 0.017*	68.45 ± 1.02*

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

Graph 1
Effect of ethanolic extract of C.hirsutus on ethanol induced Gastric ulcer

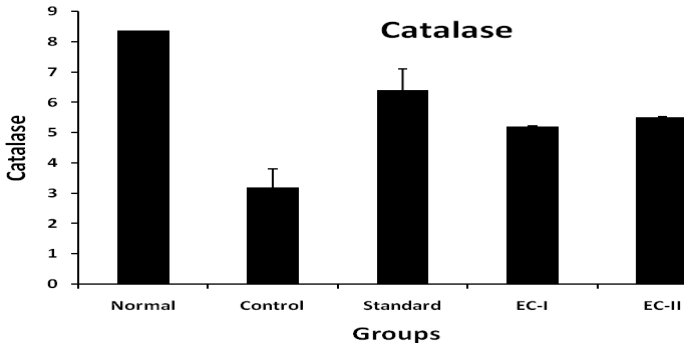


Graph 2
Effect of ethanolic extract of C.hirsutus on LPO on ethanol induced Gastric ulcer



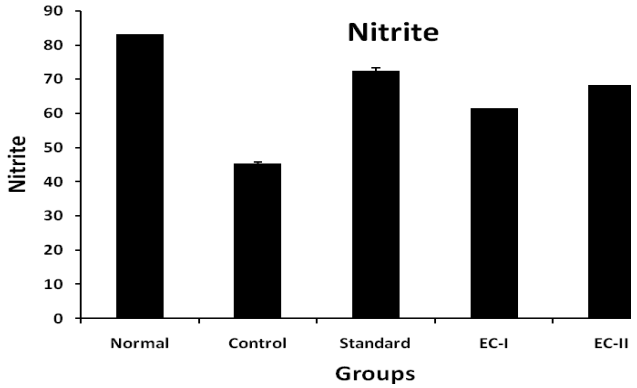
Graph 3

Effect of ethanolic extract of C.hirsutus on Catalase on ethanol induced Gastric ulcer

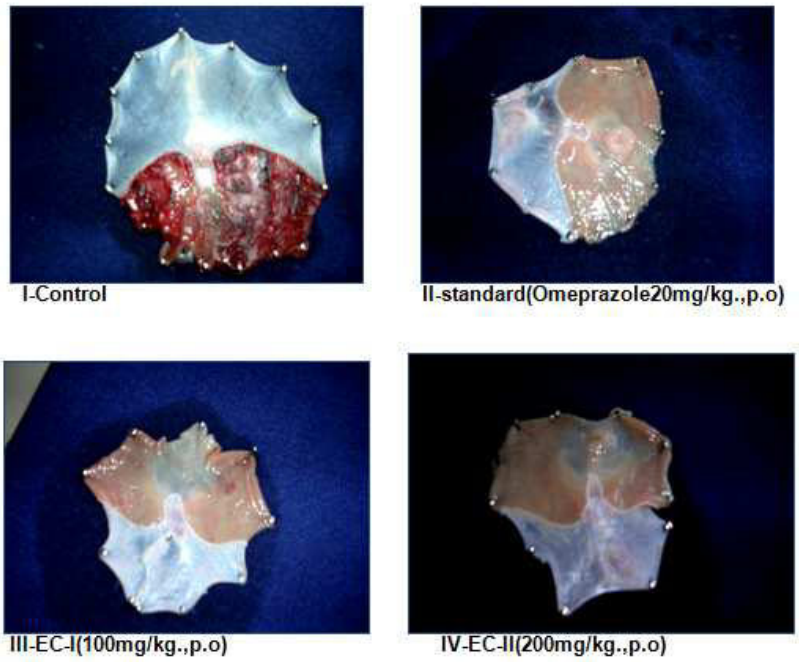


Graph 4

Effect of ethanolic extract of C.hirsutus on Nitrite on ethanol induced Gastric ulcer



Effect of ethanolic extract of Cocculus hirsutus on ethanol induced model



DISCUSSION

Results of this study establish a cytoprotective action of *Cocculus hirsutus* as it was found effective against ethanol induced model. Ulcer protection of drug may be attributed to any one of these phytochemical constituents as flavonoids, saponins. In ethanol induced model, the ulcer scores were significantly ($p<0.01$) (table 1) reduced in rats pretreated with drug extract. Moreover a significant reduction of oxidative stress, lipid peroxidation($p<0.01$) and significant increase in catalase, nitrite significantly($p<0.01$) (table 2,3 and 4).

CONCLUSION

Based on the above data it was concluded that administration of ethanolic extract of *C.hirsutus* significantly reduced ulcer index when compared to control in ethanol induced ulcer model and also the significant reduction of LPO($p<0.01$) and significant increase in Catalase, Nitrite($p<0.01$) proved its antioxidant property. Its use in indigenous medicine should be scientifically scrutinized with further research.

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