



Gastroprotective Effect of *Symplocos Racemosa* Whole Plant Methanolic Extract Against Experimentally Induced Gastric Ulcer in Rat

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ABSTRACT

Peptic ulcer is a condition which results from an imbalance between offensive and defensive factors of gastrointestinal system. The investigation was designed to evaluate the antiulcer activity of *Symplocos racemosa* whole plant methanol extract (MESR) in rat model of indomethacin-induced gastric ulceration. The total acidity, gastric volume, pH and free acidity were measured to determine the anti-ulcer activity of MESR. Pretreatment with MESR (125-500 mg/kg) markedly reduced the indomethacin-induced increase in gastric ulcer index and score. These results revealed that antisecretory effects MESR were responsible for antiulcer activity of MESR.

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1. Introduction

Peptic ulcer is a condition of gastrointestinal tract (GIT) which results from the disturbance of equilibrium between aggressive (cellular regeneration, acid-pepsin secretion) and protective (mucus secretion, mucosal barrier, prostaglandins and epidermal growth factors) factors in the stomach (Bighetti et al., 2005; Sumbul et al., 2011; Lakshmi et al., 2009). Clinically, H₂-receptor antagonists, anticholinergics, antacids and proton pump inhibitors are used to treat gastric ulcer (Chan & Leung, 2002; Muniappan & Sundararaj, 2003). However, these drugs are associated with adverse reactions, such as hematopoietic changes, arrhythmia, hypersensitivity and impotence (Shay, 1945). Therefore, new, better and safe antiulcer drugs are being explored (Trease & Evans, 1992).

Symplocos racemosa (family Symplocaceae) is a small evergreen tree found in North Eastern part of India. The plant is used traditionally to treat GIT disorders (Kirtikar & Basu, 1935; Anonymus, 1998). However, *S. racemosa* has not been explored previously for its antiulcer effects in rats. Therefore, in the present study *Symplocos racemosa* whole plant extract has been evaluated for the antiulcer activity using rat model of indomethacin-induced ulceration.

2. Materials and Method

S. racemosa whole plant was procured, authenticated and shade dried. The methanol extract of powdered plant material (MESR) was prepared by Soxhlet apparatus. MESR was filtered and concentrated under vacuum and used further.

3. Animals

Wistar Rats of 170-220 g were employed in the current study. Animals were kept in animal house at controlled conditions. The animals were fed on standard pellet diet and water *ad libitum*. Ethical clearance to conduct animal experiment was obtained from "Institutional Animal Ethics Committee" (1181/PO/ab/08/CPCSEA).

4. Experimental Protocol

Group I. Control group. Animals were administered distilled water orally.

Group II. Standard: Ranitidine (100 mg/kg) administered orally.

Group III, IV and V. MESR (125 – 500 mg/kg). Animals were administered MESR at 125, 250 and 500 mg/kg, respectively orally.

Indomethacin (40 mg/kg) was administered orally to animals 60 min after treatment for stimulation of ulceration in rats (Aguwa & Mittal, 1981; Muriel, 2008).

4. Statistical Study

The results were statistically analyzed using one-way-ANOVA.

5. Results and Discussion

Indomethacin is known to cause gastrointestinal ulcers via several mechanisms including inhibition of PGE2

Table 1. Antiulcer activity of *Symplocos racemosa* methanol extract.

Treatment	Dose	No. of Ulcer	Ulcer Score	Ulcer Index	Percent Inhibition
Control	Distilled water	11.11±3.20	2.11±0.62	10.42±0.32	–
Ranitidine	100(mg/kg)	2.01±2.15	0.23±0.41*	3.34±0.25*	67.42
MESR	125(mg/kg)	7.00±0.65*	1.61±0.63	9.97±0.15*	3.48
	250(mg/kg)	5.64±0.86*	1.58±0.74	8.11±0.16*	19.25
	500(mg/kg)	4.64±0.41*	0.54±0.50*	6.17±0.16*	24.12

Data is mean + SD, (n - 6); *p, 0.05 vs control.

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synthesis, generation of free radicals, decreasing in nitric oxide level, and increasing gastric acid secretion (Vogel, 1997): This model has been used previously to screen drugs with antiulcer activity. Therefore in the present study indomethacin-induced ulceration model was used for evaluation of antiulcer activity of *Symplocos racemosa*. Administration of indomethacin (40 mg/kg) caused increase ulcer index, number of ulcer and ulcer index. Treatment with MESR resulted in dose dependent decrease in indomethacin induced ulcer index and number of ulcer (Table 1). These results indicated that antiulcer potential of *Symplocos racemosa*.

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