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Evaluation of Anti-ulcer Activity of Ocimum Sanctum (Tulsi) in Aspirin-induced Gastric Ulcers in Rats

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Background & Aim: Peptic ulcer disease is a major gastrointestinal condition resulting from an imbalance between aggressive and protective mechanisms in the gastric mucosa. Nonsteroidal anti-inflammatory drugs (NSAIDs), particularly aspirin, can trigger ulceration by suppressing prostaglandin synthesis and weakening mucosal defense. *Ocimum sanctum* (Tulsi), a widely used medicinal herb in Ayurveda, is known for its antioxidant, anti-inflammatory, and cytoprotective actions. The present study aimed to investigate the anti-ulcer potential of *Ocimum sanctum* leaf extract in aspirin-induced gastric ulcer models in Wistar rats.

Methods: Wistar albino rats (150–200 g) were randomly divided into five groups (n = 6). Group I served as the normal control, while Group II received aspirin (200 mg/kg, p.o.) to induce ulcers. Group III was administered the standard anti-ulcer drug omeprazole (20 mg/kg, p.o.), and Groups IV and V received *Ocimum sanctum* extract (200 mg/kg and 400 mg/kg, p.o., respectively) for seven consecutive days before aspirin induction. After the experimental period, gastric tissues were assessed for ulcer index, gastric volume, pH, and total acidity. Histopathological examination was conducted to evaluate mucosal integrity. Statistical analysis was performed using one-way ANOVA followed by Dunnett's test.

Results: Pretreatment with *Ocimum sanctum* extract produced a significant reduction ($p < 0.05$) in ulcer index and gastric acidity, along with a marked increase in gastric pH, when compared to the ulcer control group. The 400 mg/kg dose exhibited superior gastroprotective effects, closely comparable to omeprazole. Histopathological findings confirmed notable protection of the gastric mucosa, with reduced epithelial damage, edema, and inflammatory infiltration in treated groups.

Conclusion: Ocimum sanctum demonstrated significant anti-ulcer activity in aspirin-induced ulcer models, suggesting that its gastroprotective action may be attributed to antioxidant and cytoprotective mechanisms. These findings support its traditional therapeutic use and indicate its potential as a promising natural agent for the management of peptic ulcer disease.

Keywords: Ocimum sanctum, Tulsi, anti-ulcer activity, aspirin-induced ulcers, gastroprotection, herbal therapy, Wistar rats, cytoprotection.

Biography 1: Ms. Miriyala Renuka Swathi is an M.Pharm postgraduate in Pharmacology who completed her research work under the guidance of Ms. N. Rajeswari, M.Pharm (Pharmacology). She carried out her thesis on the anti-diabetic and antioxidant potential of Momordica charantia, earning appreciation for her scientific approach. Her research interests focus on Evaluation of Anti-ulcer Activity of Ocimum Sanctum (Tulsi) in Aspirin-induced Gastric Ulcers in Rats.

Biography 2: Ms. N. Rajeswari, M.Pharm (Pharmacology), is an Assistant Professor at Sri Venkateswara College of Pharmacy with over 6 years of academic and research experience. Her interests include experimental pharmacology, toxicology and herbal drug research, with a focus on integrating traditional medicine with modern therapeutics.

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