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Wood calamint ameliorates ethanol-induced stomach injury in rats by augmentation of hsp/bax and inflammatory mechanisms

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Abstract

Clinopodium menthifolium (wood calamint) is a folkloric medicinal plant ingested as a treatment for many human disorders including gastric disorders. Our study evaluates the anti-ulcer potentials of *Clinopodium menthifolium* ethanol extracts (CMEE) in induced gastric ulcers in rats. Thirty Dawley male rats were divided into 5 groups: normal and ulcer controls, treated orally with Tween 20%; reference rats treated with Omeprazole 20 mg/kg, and the remaining two groups received 250 and 500 mg/kg CMEE for 2 weeks. After that, food was taken away for 24 h, and then, rats received ethanol-induced gastric ulceration (except normal control), 80% (1 ml/rat). After anesthetization and sacrificing, the ulcer index, mucus content, and other ulcer measurements were obtained from dissected rat stomachs. Stomach tissues were also analyzed by different histology procedures and homogenized stomach tissues were assessed for their antioxidant contents. The toxicity trial showed the absence of any toxic signs in rats supplemented with 2 and 5 g/kg of CMEE. The gastroprotective results showed a significantly lower ulcer index and higher gastric mucin content in CMEE-ingested rats compared to ulcer controls. Furthermore, CMEE treatments significantly increased the intensity of periodic acid Schiff stained (PAS), HSP 70 protein, and down-regulation of Bax protein expression in the stomach epithelium. Rats supplemented with 500 mg/kg revealed noticeable changes in their serum inflammatory cytokines along with positive regulations of antioxidant enzymes. The outcomes provide a scientific backup behind the gastroprotective potential effect of CMEE that could serve as a natural resource against peptic ulcers.