

Gastroprotective activity of chloroform extract of *Muntingia calabura* and *Melastoma malabathricum* leaves

ABSTRACT

Context: *Muntingia calabura* L. (family Muntingiaceae) and *Melastoma malabathricum* L. (family Melastomaceae) are traditionally used to treat gastric ulcer. Objective: The present study determines the mechanisms of gastroprotective activity of the chloroform extract of leaves obtained from both the plants using several in vitro and in vivo assays. Materials and methods: Phytochemical screening, HPLC analysis, and antioxidant activity of the respective extract were carried out. Gastroprotective activity was determined using ethanol-induced gastric ulcer assay while the mechanisms of gastroprotection were determined using the pyloric ligation assay. The test solutions [8% Tween-80 (vehicle), 20 mg/kg omeprazole, and different doses of extracts (50, 250, or 500 mg/kg)] were administered orally once daily for 7 consecutive days before the animals were subjected to ethanol induced gastric ulcers. Results: The chloroform-extracted *M. calabura* (CEMC) contains tannins, polyphenolics, triterpenes, and steroids while the chloroform-extracted *M. malabathricum* (CEMM) contains only triterpenes and steroids. CEMC, but not CEMM, exerted remarkably strong antioxidant activity in the 2,2-diphenyl-1-picrylhydrazyl (DPPH)- (86% versus 16%) and superoxide- (73% versus 36%) radical scavenging assays. Both extracts demonstrated significant ($p < 0.05$) gastroprotection with the EC₅₀ value recorded at 192.3 or 297.7 mg/kg, respectively. In the pylorus ligation assay, CEMC and CEMM significantly ($p < 0.05$) reduced the total and free acidity and volume; while increased the pH of gastric juice as well as the gastric wall mucus content in comparison with the vehicle-treated group. Discussion and conclusion: CEMC and CEMM exert gastroprotective effects in animals with ethanol-induced gastric ulcers via antioxidant and anti-secretory effects.

Keyword: Anti-secretory; Antioxidant; Gastric ulcer prevention; Mechanisms of action; Melastomaceae; Muntingiaceae