DUAL ROLE OF EUGENOL ON CHRONIC GASTRIC ULCER IN RATS: LOW DOSE HEALING EFFICACY AND THE WORSENING GASTRIC LESION IN HIGH DOSES

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INTRODUCTION

Eugenol is the main bioactive compound present in clove essential oil, and a study conducted by our research group showed that this compound has gastroprotective activity by stimulating the mucus production. Therefore, this study was designed to evaluate the healing effect of Eugenol on chronic gastric ulcer induced by acetic acid in rats.

MATERIAL AND METHODS

Five groups (n=6) of adult Wistar rats were submitted to acetic acid-induced ulcer model and treated with Vehicle (10% DMSO, 1 mL/kg), Eugenol (1, 10 or 100 mg/kg, p.o) or omeprazole (20 mg/kg, p.o) twice a day by seven or fourteen days. Macroscopic, microscopic and biochemical analyses were done in the ulcer site after the euthanasia. All protocols were approved by the Institutional Animal Ethics Committee on the UNIVALI (CEUA/UNIVALI; approval number 064/17P).

RESULTS

The oral treatment with Eugenol (1 mg/kg) for 7 or 14 days accelerated the gastric healing by 33.42% and 51.67%, respectively, compared to vehicle-treated group. The healing actions of eugenol at 1 mg/kg were accompanied by the rescue on the histological architecture and the normalization of the superoxide dismutase and catalase activity at ulcer site. Besides, Eugenol (1 mg/kg, p.o) reduced the gastric mucosal myeloperoxidase activity. In contrast, rats treated with Eugenol at a dose of 100 mg/kg by seven days experienced an enhancement of 49.24% in ulcer area compared to the vehicle group. Intermediate doses of Eugenol, i.e 10 mg/kg, not change the ulcer area after 7 or 14 days of treatment.

CONCLUSIONS

These findings suggest that Eugenol has therapeutic potential in favor of gastric healing only at low doses, which is associated with an increment in mucus production and the normalization of oxidative status due the reduction to neutrophils infiltration. Thus, the antiulcer potential of this compound is still manageable in an adequate dose.

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