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Effects of Alpha-pinene on oxidative stress and inflammatory response in acute gastric ulcers in rats

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Abstract

Despite the many therapeutic advances, gastric ulcers continue to be prevalent. Natural compounds have been found to play a crucial role in preventing gastric ulcers in various phytochemical studies. The study aimed to investigate the protective effect of alpha-pinene against ethanol-induced gastric ulcers in rats by evaluating its impact on pro-inflammatory cytokines and oxidative stress markers. Male Wistar rats were orally administered alpha-pinene (50 and 100 mg/kg) prior to being induced with gastric ulceration using ethanol, and the gross morphological lesions, pro-inflammatory cytokine levels, and oxidative stress markers in gastric tissues were evaluated. Alpha-pinene treatment reduced gross morphological lesions in comparison to untreated animals. In ethanol-treated rats, alpha-pinene at 50 and 100 mg/kg also reduced oxidative stress, as verified by a decrease in tissue myeloperoxidase activity and malondialdehyde levels. In addition, alpha-pinene at both doses increased GSH and CAT levels compared to the untreated group. Alpha-pinene at both doses also lowered IL-1β and TNF-α production compared to the untreated group. Alpha-pinene may have a beneficial therapeutic role in gastric damage induced by ethanol as it reduces oxidative stress and pro-inflammatory factors.

Key words: Alpha-pinene, Inflammatory cytokines, Oxidative responses, Acute gastric injury

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