

Investigation of the protective effects of geraniol on cyclophosphamide-induced hepatotoxicity in rats

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This study aimed to investigate the efficacy of geraniol (Ge) on improving cyclophosphamide (CP)-induced hepatotoxicity in rats. A total of 42 rats in 6 groups, group I (control); group II (CP at 20 mg/kg); group III (CP at 20 mg/kg + Ge at 100 mg/kg); group IV (CP at 20 mg/kg + Ge at 200 mg/kg); group V (Ge at 100 mg/kg); and group VI (Ge at 200 mg/kg), were used. Ge was administered orally via gavage daily for 14 days. Intraperitoneal CP was administered from day 8 to 14. Blood serums were analysed for alanine aminotransferase (ALT), aspartate aminotransferase (AST), total antioxidant status (TAS), and total oxidant status (TOS) over a 14-day period. Liver sections were stained using hematoxylin and eosin (H&E). NFκB expression was assessed using immunohistochemistry. Bax-Bcl immunofluorescence was employed to identify apoptosis, whereas TUNEL was utilised to detect DNA fragmentation. Group III and group IV exhibited significantly decreased histopathological scores, NFκB expression, and DNA breaks compared to group II. The OSI and AST levels were significantly reduced in group IV compared to group II. The current investigation indicates that Ge possesses anti-inflammatory and antioxidant effects on CP-induced liver damage.

Keywords: Chemoprevention, Antioxidants, Histopathology, Liver, Apoptosis