

عنوان مقاله:

In-depth hepatoprotective mechanistic study of Echinacea purpurea flowers: In vitro and in vivo studies

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خلاصه مقاله:

Introduction: Echinacea purpurea is a flowering plant commonly used as an herbal medicine despite insufficient scientific bases to validate its usage. The present study aimed to examine in vitro and in vivo hepatoprotective effects of aqueous and alcoholic extracts of E. purpurea flowers. Methods: In vitro protection against hepato-cytotoxicity was carried out on human HepG-2 cells using colorimetric tetrazolium (MTT) assay, while the in vivo hepatoprotective activity was studied against carbon-tetrachloride (CCl4) induced acute hepatotoxicity in rats. Results: The results revealed that the extracts of E. purpurea induced discernable in vitro protection on HepG-2 cells and in vivo against CCl4 induced hepatotoxicity. Both extracts were significantly able to restore the serum levels of aspartate aminotransferase (AST), alanine aminotransferase (ALT), alkaline phosphatase (ALP), total bilirubin, total protein, and albumin to normal levels compared to the CCl4 intoxicated group. In addition, the extracts markedly mitigated the oxidative stress by decreasing Malondialdehyde (MDA) and increasing superoxide dismutase (SOD) and glutathione (GSH) markers compared to the CCl4 intoxicated group. It was also associated with the down-regulation of tumor necrosis factor- α (TNF- α) and interleukin-6 (IL-6) levels in liver tissues. Histopathological examination revealed a decrease in hepatocytes' degenerative changes and noticeable improvement of the liver damage by extracts of E. purpurea. Conclusion: These findings have proven that aqueous and alcoholic extracts of E. purpurea flowers have a significant hepatoprotective effect, probably owing to antioxidant, anti-inflammatory activities, and regulating apoptotic-related genes. This confirms the ethnomedicinal uses of E. purpurea in patients suffering from liver diseases.

کلمات کلیدی:

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