

Eleusine indica L. possesses antioxidant activity and precludes carbon tetrachloride (CCl₄)-mediated oxidative hepatic damage in rats

Abstract

Objectives

The purpose of this study was to evaluate the ability of aqueous extract of *Eleusine indica* to protect against carbon tetrachloride (CCl₄)-induced hepatic injury in rats.

Methods

The antioxidant activity of *E. indica* was evaluated using the 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging assay. The total phenolic content of *E. indica* was also determined. Biochemical parameters [e.g. alanine aminotransferase (ALT), aspartate aminotransferase (AST), malondialdehyde (MDA), glutathione (GSH), catalase, glutathione peroxidase, glutathione reductase, glutathione S-transferase and quinone reductase] were used to evaluate hepatic damage in animals pretreated with *E. indica* and intoxicated with CCl₄. CCl₄-mediated hepatic damage was also evaluated by histopathologically.

Results

E. indica extract was able to reduce the stable DPPH level in a dose-dependent manner. The half maximal inhibitory concentration (IC₅₀) value was 2350 µg/ml. Total phenolic content was found to be 14.9 ± 0.002 mg/g total phenolic expressed as gallic acid equivalent per gram of extract. Groups pretreated with *E. indica* showed significantly increased activity of antioxidant enzymes compared to the CCl₄-intoxicated group ($p < 0.05$). The increased levels of serum ALT and AST were significantly prevented by *E. indica* pretreatment ($p < 0.05$). The extent of MDA formation due to lipid peroxidation was significantly reduced ($p < 0.05$), and reduced GSH was significantly increased in a dose-dependently manner ($p < 0.05$) in the *E. indica*-pretreated groups as compared to

the CCl₄-intoxicated group. The protective effect of *E. indica* was further evident through decreased histopathological alterations in the liver.

Conclusion

The results of our study indicate that the hepatoprotective effects of *E. indica* might be ascribable to its antioxidant and free radical scavenging property.