Hepatoprotective Effect of Extract of Curcuma Longa Rhizomes against Ethanol Induced Liver Damage in Rats
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Purpose
Hepatic disorders constitute one of the main causes of worldwide mortality. Several therapeutic activities have been attributed to the rhizomes of the plant Curcuma longa (CL) and its principal active component, curcumin for a variety of diseases, including liver disorders. The beneficial activity of the extract on liver diseases due to alcohol consumption has not being reviewed in depth utilizing Sprague-Dawley (SD) rats until now. The purpose of this study is to introduce the multifaceted pharmacological effects and related mechanisms of the CL extract on hepatic functions.

Methods
The protective effect of the ethanol extract of CL on acute hepatotoxicity induced by 20% ethanol (5 ml/kg/day, peroral) for 2 weeks was studied in male SD rats. The dose of ethanol extract was 500 mg/kg. Blood and hepatic tissue samples obtained from male SD rats were analyzed. The hepatoprotective effect of the extract was evaluated by the assay of liver function parameters and antioxidant enzymes studies of the liver.

Results
The mechanisms which provide hepatoprotective effects of the extract are closely attributed to its antioxidation properties. The ethanol extract of CL enhanced the antioxidant defense mechanism and increased self-antioxidant enzyme activities of glutathione-S-transferase (GSTs) in the SD-rat liver. The extract treatments inhibited malondialdehyde and thiobarbituric acid-reactivity as diagnostic indices of lipid peroxidation and peroxidative tissue injury. The rhizomes extract exerted pronounced inhibition of oxidative burst activity in blood serum and hepatic tissue samples. The elevated level of glutathione S-transferases (GSTs) of liver homogenates such as cytosolic-, microsomal- and mitochondrial-GST, and cytochrome P450 were decreased by the CL extract. The administration of the rhizomes extract caused significant (p < 0.05) reduction of high levels of liver injury marker enzyme such as alanine aminotransferase (ALT/GPT), total cholesterol, serum triglyceride, and detoxification enzymes such as GSTs.

Conclusion
The results show that the rhizomes extract of C. longa has protective action against alcohol-induced toxicity in the SD rat liver by elevating antioxidative potentials and decreasing lipid peroxidation.