

Prevention of hepatic oxidative injury by

Xiao-Chen-Chi-Tang in mice

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摘要

Abstract

The three purgative Cheng-Chi-Tang decoctions (CCTDs) including Ta-Cheng-Chi-Tang (TCCT), Xiao-Chen-Chi-Tang (XCCT), and Tiao-Wei-Chen-Chi-Tang (TWCCT) are used for treating gastrointestinal disorders, including liver diseases in traditional Chinese medicine. However, the underlying mechanisms as liver disease remedies are far from fully clarified. The objective of the study is to investigate and compare the antioxidant activity of the three purgative CCTDs in order to delineate their hepatic protective potential and mechanism. Antioxidant activity measured with the 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging test indicated XCCT as the most potent preparation (IC₅₀ 8.94 µg/ml). In tert-butylhydroperoxide (TBH, 50 mM)-induced lipid peroxidation in ICR mice liver homogenates, XCCT also showed stronger and dose-dependent inhibitory activity against TBH-induced malondialdehyde (MDA, a marker of lipid peroxidation) production (IC₅₀ 53.66 µg/ml). In addition, XCCT showed dose-dependent protective effect against TBH-induced cytotoxicity in normal human Chung liver cells. Furthermore, in carbon tetrachloride (CCl₄)-induced acute liver injury model, mice pretreated with 0.2 g/kg and 0.4 g/kg of XCCT extracts showed a decrease of 59.8 and 43.1% in serum glutamic oxaloacetic transaminase (GOT) level, 51.4 and 52% in glutamic pyruvate transaminase (GPT) level, along with a reduction of 31 and 15% in MDA level, respectively, similar to the effects exerted by silymarin. XCCT pretreated mice also showed milder necrotic changes in the microscopic picture of the liver. The results suggest that XCCT has significant antioxidant activity and hepatic protection potential.