Title: “Caffeine as a promising antifbrotic agent against ccl4-induced liver fibrosis”

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Abstract:

Objective: Hepatic fibrosis is a wound-healing process in the liver with chronic injury and is characterized by an excess production and deposition of extracellular matrix (ECM) components. Our aim is to investigate the hepatoprotective effects of caffeine against CCL4-induced liver fibrosis in rats and to be compared with the reference standard N-acetylcysteine (NAC). Methods: Rats were divided into 5 groups (n=8), the 1st group served as normal control, the 2nd group received corn oil, the 3rd group is a fibrosis control and the remaining two groups received in addition to CCL4, NAC (150 mg/kg/day) as a reference treatment and caffeine (15 mg/kg/day). At the end of experimental period the following parameters were measured, specific fibrosis biomarkers [hepatic transforming growth factor β1(TGFβ1) and hepatic hydroxyproline (HYP)], liver function biomarkers [serum alanine transaminase (ALT), aspartate transaminase (AST), total bilirubin and albumin], lipid profile [serum triglycerides, total cholesterol, low density lipoprotein cholesterol (LDL-Ch) and high density lipoprotein cholesterol (HDL-Ch)], inflammatory biomarkers [serum tumor necrosis factor alpha (TNF-α), hepatic myeloperoxidase (MPO)], oxidative stress biomarkers [hepatic malondialdehyde (MDA), glutathione (GSH) and catalase (CAT)], relative liver body weight and liver histopathological study. Results: Caffeine significantly improved all the aforementioned biochemical parameters and liver sections obtained from this group showed prominent histopathological improvement. Conclusion: Caffeine hepatoprotective effects may be due to modulation of the fibrous scar formation, Improvement of liver function, Antiinflammatory and antioxidant potentials.

Keywords:

Liver Fibrosis, Rat, CCL_4, NAC, Caffeine