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Antioxidant activity and Hepatoprotective effects of *Centaurea incana* on CCL4-induced liver toxicity in rats

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AIM: The aim of the present study was to investigate the potential antioxidant and hepatoprotective effects of *Centaurea incana* on the free radical damage of liver caused by carbon tetrachloride in rats.

METHODS: For study of preventive effect of extract methanolic of *Centaurea incana* on CCL4 –induced hepatotoxicity, our study carry out on rats as follows: The animals were randomly divided in to 4 different groups comprising 7 animals each. Group I served as controls and received an injection of vehicle (olive oil) alone; Acute liver injury in rats was induced by a single intraperitoneal injection with CCL4 dissolved in an equal volume of olive oil at a dose of 3 mL/kg body weight, group II, which is well documented to induce hepatotoxicity. Group III was administered Methanolic extract of *Centaurea incana* at a dose of 500 mg/kg alone. In group IV was administered Methanolic extract of *Centaurea incana* at a dose of 500 mg/kg and was injected by CCL4 i.p, at a dose of 3ml/kg body weight. After 4 weeks of treatment, All of the animals were sacrificed 24 h after administration of CCL4, and blood was collected, serum separated and stored at –20 °C.

RESULTS: The single intraperitoneal injection with CCL4 caused severe hepatotoxicity in rats, as evidenced by the significant elevation of serum AST and ALT activities after the administration of CCL4. the concentration of MDA, an end product of lipid peroxidation, in the rats treated with CCL4 was increased 2.7-fold when compared with the vehicle control rats. However, pre-treatment with *Centaurea incana* significantly prevented the elevation of serum AST and ALT activities induced by CCL4 treatment. Consistent with the serum AST and ALT activities, pre-treatment with *Centaurea incana* for 4 weeks to the rats resulted in a significant decrease in the concentration of hepatic MDA when compared with the CCL4 group. In conclusion, our investigation provided convincing data that *Centaurea incana* decrease the lipid per-oxidation and liver enzymes, and increase the anti-oxidant defense system activity in the CCL4-treated rats. The mechanisms underlying hepatoprotection of the methanolic extract of *Centaurea incana* may be related to both its radical scavenging properties and indicate effects as a regulator of antioxidative systems.

Key words: CCL4; *Centaurea incana*; Lipid peroxidation; Antioxidant enzymes; Rat