

Ameliorative effect of curcumin on lead-induced hematological and hepatorenal toxicity in a rat model

ABSTRACT

Introduction: Lead (Pb) is a ubiquitous toxic heavy metal that inflicts numerous clinical consequences on humans. Curcumin is the principal component of turmeric, which is reported to have antioxidative properties. This study aimed at evaluating the ameliorative effects of curcumin on Pb-induced hepatorenal toxicity in a rat model. **Methods:** Thirty-six male Sprague-Dawley rats were randomly assigned into five groups with 12 rats in the control (normal saline) and six rats each for the lead-treated group (LTG) (50 mg/kg lead acetate [Pb acetate] for 4 weeks), recovery group (50 mg/kg Pb acetate for 4 weeks and left with no treatment for another 4 weeks), treatment group 1 (Cur100) (50 mg/kg Pb acetate for 4 weeks, followed by 100 mg/kg curcumin for 4 weeks), and treatment group 2 (Cur200) (50 mg/kg Pb acetate for 4 weeks, followed by 200 mg/kg curcumin for 4 weeks). All the experimental groups received oral treatments via orogastric-tube on alternate days. Pb concentration in the liver and kidney of the rats were evaluated using inductive-coupled plasma mass spectrometry techniques. **Results:** Pb-administered rats revealed significant alteration in oxidative status and increased Pb concentration in their liver and kidney with obvious reduction of hemogram and increased in leukogram as well as aberration in histological architecture of the liver and kidney. However, treatment with curcumin reduces the tissue Pb concentrations and ameliorates the above mention alterations. **Conclusions:** The results in this study suggested that curcumin attenuates Pb-induced hepatorenal toxicity via chelating activity and inhibition of oxidative stress.

Keyword: ICP-MS; Curcumin; Hepatorenal toxicity; Lead toxicity; Oxidative stress