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Protective Effect of Celosia Argentea Leaf Extract on Cadmium Induced Toxicity and Oxidative Stress in Rats

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Abstract : The ameliorative effect of Celosia argentea var. cristata leaf extract against cadmium (Cd) induced oxidative stress and toxicity in selected tissues of rats was investigated. Toxicity coupled with oxidative stress was induced in rats by oral administration of Cd (8 mg/kg b. wt). Preliminary quantitative phytochemical and in vitro antioxidant analyses showed that the methanolic extract of C. argentea leaves was constituted by polyphenols (5.72%), saponins (3.20%), tannins (0.65%) and cadenolides (0.006%). IC50 of 9800, 7406, and 45.04 µg/ml were recorded for inhibition of linoleic acid oxidation, 2, 2-diphenyl-1-picrylhydrazyl and hydrogen peroxide radicals respectively. Simultaneous administration of C. argentea leaf extract with Cd significantly attenuated Cd-induced elevation of serum enzyme markers such as aspartate and alanine transaminase, alkaline and acid phosphatase as well as γ-glutaryltransferase in a dose-dependent fashion, while their reduced level in the liver were significantly increased. Higher levels of enzymatic antioxidants; superoxide dismutase and catalase activities were observed in the liver, brain, kidney and testes of the Cd-induced rats treated with C. argentea extract, while lipid peroxidation expressed in malondialdehyde concentrations were lower when compared to values in rats administered Cd only. Other Cd-induced toxicity and stress markers in the serum viz. reduced uric acid and albumin levels as well as elevated total and unconjugated bilirubin were attenuated by the extract and their values compared favorably with those animals co-administered cadmium with ascorbic acid. Data from the study showed that oral administration of extract from the leaf C. argentea may ameliorate Cd-induced oxidative stress and toxicity in rats.

Keywords : toxicity, cadmium, celosia, antioxidants, oxidative stress
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