Onion and garlic extracts as potential antidotes for cadmium-induced biochemical alterations in prostate glands of rats

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Abstract

Cadmium (Cd) has been implicated in increased prostate gland malignancy risk in both wildlife and humans. This study examines the chemoprotective roles of onion and garlic extracts on Cd-induced biochemical alterations in the prostate glands of rats. Adult male Wistar rats were randomly divided into nine groups: control group received double distilled water; Cd group received Cd alone (1.5 mg/100 g bwt per day); extract-treated groups were pre-treated with varied doses of onion and/or garlic extract (0.5 ml and 1.0 ml/100 g bwt per day) for 1 week and then co-treated with Cd (1.5 mg/100 g bwt per day) for additional 3 weeks. Oxidant/antioxidant status and acid phosphatase ($ACP_{total}$and $ACP_{prostatic}$) activity were examined in prostate glands. Cd intoxication caused a marked ($P < 0.001$) increase in lipid peroxidation (LPO) and glutathione S-transferase (GST) levels, whereas glutathione (GSH), superoxide dismutase and catalase levels were markedly ($P < 0.001$) decreased. We also observed significant ($P < 0.001$) decrease in ACP_{total} and $ACP_{prostatic}$ activities in prostate glands and a concomitant significant ($P < 0.001$) increase in the plasma. However, treatment of Cd-intoxicated rats with onion and/or garlic extract significantly minimised these alterations. The onion extract offered a dose-dependent protection. Our findings suggest a chemoprotective capability for onion and garlic extracts against Cd-induced biochemical alteration in the prostate glands.

Keywords: Biochemical, Alteration, Cadmium, Garlic, Onion, Prostate, Glands

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