Protective roles of onion and garlic extracts on cadmium-induced changes in sperm characteristics and testicular oxidative damage in rats

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Abstract

Cadmium (Cd) is known to exert gonadotoxic and spermiotoxic effects. The present study was performed to assess the possible protective roles of onion (*Allium cepa* Linn) and garlic (*Allium sativum* Linn) extracts on Cd-induced testicular damage and spermiotoxicity. The control group received double distilled water; Cd group received Cd (1.5 mg/100 g BW/day) orally; extract-treated groups were pre-treated with varied doses of onion and/or garlic extract (0.5 ml and 1.0 ml/100 g BW/day) orally for one week and then simultaneously challenged with Cd (1.5 mg/100 g BW/day) for additional three weeks. Testicular tissue oxidant/antioxidant status and sperm characteristics were determined. Cd caused a marked ($p < 0.001$) rise in testicular lipid peroxidation (LPO) and glutathione *S*-transferase (GST) levels whereas glutathione (GSH), superoxide dismutase (SOD), catalase (CAT) and alkaline phosphatase (ALP) levels were decreased. Cd intoxication significantly ($p < 0.001$) decreased epididymal sperm concentration and sperm progress motility, increased percent total sperm abnormalities and live/dead count. Both extracts successfully attenuated these adverse effects of Cd. Onion extract offers a dose-dependent protection. Our study demonstrated that aqueous extracts of onion and garlic could proffer a measure of protection against Cd-induced testicular oxidative damage and spermiotoxicity by possibly reducing lipid peroxidation and increasing the antioxidant defence mechanism in rats..

Keywords: Cadmium, Onion, Garlic. Oxidative damage, Testis, Sperm, characteristics, Protection

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