

Onion (*Allium cepa*) extract prevents cadmium induced renal dysfunction

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Abstract

Cadmium (Cd), a heavy metal, is known for its adverse effects on the body. In this study, the lowering effect of Cd on renal clearance (RC) was investigated, and *Allium cepa* extract (AcE) (an antioxidant) was pre-administered orally to prevent Cd's adverse effects. Seventy-two Wistar rats, grouped into three (n = 24), were used for this study. While Group C was given 1.0 ml of AcE daily (orally), Group A and Group B were given distilled water. AcE administration was done for eight weeks. Afterwards B and C were then given 1.5 ml/kg BW of 0.3 mg/L $3\text{CdSO}_4 \cdot 8\text{H}_2\text{O}$ intraperitoneally for three consecutive days. The results obtained showed that Cd causes significant reduction in the 24 hour urine volume (from 3.017 ± 0.125 to 2.433 ± 0.118 ml), RC (from 3.258 ± 0.114 to 1.357 ± 0.104 ml/h for creatinine; and from 0.350 ± 0.057 to 0.185 ± 0.055 ml/h for urea), plasma and tissue SOD and CAT activity (from 1.644 ± 0.036 to 1.307 ± 0.056 u/g protein for plasma SOD; 0.391 ± 0.029 to 0.2692 ± 0.031 u/protein for plasma CAT; 1.695 ± 0.034 to 1.327 ± 0.049 u/g protein for tissues SOD; and from 0.350 ± 0.027 to 0.273 ± 0.043 u for tissue CAT), and significant MDA increased in plasma (from 1496.79 ± 1.321 to 1679.48 ± 143.29 $\mu\text{g/g}$ protein) and tissue (from 1265.22 ± 2.285 to 1669.87 ± 14.61 $\mu\text{g/dL}$). AcE, however, prevents these Cd's adverse effects. This findings lead to the conclusion Cd exposure causes renal dysfunction, but oral administration of onion could prevent it.

Keywords: *Allium cepa*, cadmium, heavy metals, renal clearance, reactive oxygen species

behavior, and structural evolution over time. Thus, these overview studies discuss the possible simplicity of electrochemical degradation of metal, the susceptibility within the metal range, and the protective coatings characteristics.