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Renal Protective Effects of Coenzyme Q10 Against Chromate Induced Nephrotoxicity in Rats

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Abstract

Background and Objective: Exposure to human carcinogens as hexavalent chromate compounds is unavoidable. Chromate induces nephrotoxicity mainly due to increased cellular oxidative stress. The current study evaluates the renoprotective effects of coenzyme Q10 (CoQ10) in potassium dichromate (Chromate) induced nephrotoxicity in rats. Materials and Methods: Animals were divided to 3 groups, normal control group was fed distilled water, positive control group was treated by 12 mg kgG1 chromate once per week for 6 weeks. The third group was treated daily by CoQ10 (10 mg kgG1) for 6 weeks and 12 mg kgG1 chromate once per week for 6 weeks. At the end, blood pressure (BP) and heart rate (HR) were measured. Kidney function tests, lipid profile, oxidative stress and inflammatory bio-markers were determined. Results: Chromate resulted in hypertension, worsens kidney function tests, oxidative stress and inflammatory bio-markers. The use of CoQ10 ameliorated these harmful effects. This could be attributed to its antioxidant and anti-inflammatory activity. Conclusion: The present results suggest that CoQ10 has a promising potential in the protection against chromate-induced nephrotoxicity.

Funding and Conflicts of Interest

None