Comparative study of multiple dosage of quercetin against cisplatin-induced nephrotoxicity and oxidative stress in rat kidneys

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Abstract:
Quercetin, a typical bioflavonoid ubiquitously present in fruits and vegetables, is considered to be helpful for human health. Cisplatin (cDDP) is one of the most active cytotoxic agents in the treatment of a wide range of solid tumors. The aim of this study was to investigate the possible effect of quercetin, a bioflavonoid with antioxidant potential, on cisplatin-induced nephrotoxicity and lipid peroxidation in rats. Gavage administrations of water, propylene glycol and quercetin (50 mg/kg) were made 24 and 1 h before saline or cDDP (5 mg/kg) ip injections and were repeated daily for 2, 5 or 20 subsequent days. Rats were killed 2, 5 and 20 days after ip injections, and blood and urine samples were collected to determine plasma creatinine, urine volume and osmolality. The kidneys were removed to determine the levels of thiobarbituric acid-reactive substances (TBARS) and for histological studies. Cisplatin increased lipid peroxidation, urine volume and plasma creatinine levels and decreased urine osmolality. Treatment with quercetin attenuated these alterations. These results demonstrate the role of oxidative stress and suggest a protective effect of quercetin on cisplatin-induced nephrotoxicity in adult Wistar rats.

Key words:
quercetin, cisplatin, antioxidants, lipid peroxidation, nephrotoxicity