The Protective Effect of Curcumin Against Cisplatin-induced Nephrotoxicity in Rats

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ABSTRACT

Cisplatin is a platinum group of chemotherapeutic agent, frequently used for treatment of testicular, head, neck, bladder cancer, etc. Unfortunately, the use of cisplatin is limited by the high rate of acute or chronic renal failure. The mechanism of cisplatin induced nephrotoxicity is not fully understood. However, free radicals are suggested to play an important role in cisplatin nephrotoxicity. Administration of cisplatin increases lipid peroxidation and reduces the activity of antioxidant enzymes. Curcumin has been reported to be a potent antioxidant agent and has protective effects on several organ or cell from free radical induced injury. The present study was aimed to investigate the protective effects of curcumin on cisplatin induced nephrotoxicity in rats and to find out whether this protective effects were mediated by the antioxidant effects of curcumin. The antioxidant effects of curcumin was compared to N-acetyl cysteine (NAC). The result showed that curcumin administration at the dose of 10 mg/kg BW decreased MDA in kidney but not significantly reduced ureum, creatinin and plasma MDA levels compared to Csp group. While renal MDA level was significantly reduced approaching normal level. The increase of curcumin dose to 50 mg/kg BW did not decrease ureum and creatinin levels compared to Csp group. In contrast to renal MDA level, administration of curcumin 50 mg/kg BW significantly decreased MDA level in plasma. Administration of NAC 500 mg/kg BW slightly reduced ureum, creatinin, and MDA levels, however no statistical significance was observed.

From this study, we concluded that curcumin administration before and after cisplatin injection did not significantly decrease nephrotoxicity of cisplatin. The reduced oxidative stress by curcumin may not prevent cisplatin induced nephrotoxicity.

Keyword: cisplatin, nephrotoxicity, free radical, curcumin

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