Background: The usefulness of cisplatin, a potent anti-tumor, is limited by its ability to induce nephrotoxicity. The cellular changes leading to this toxicity are suggested to be mediated by increased free radicals generation and lipid peroxidation.
Aim of the study: To investigate the protective properties of simvastatin on cisplatin-induced nephrotoxicity in rats using biochemical and histopa- thological approaches.
Material and methods: 35 healthy male Swiss albino rats were used. They were divided into 5 groups (7 animals in each group and all animals supplied with standard food during the experiment): control group (1 ml/kg of normal saline i.p. once daily for 14 days), cisplatin treated group (7.5 mg/kg, i.p. single dose), simvastatin treated group (1 mg/kg, i.p., once daily for 14 days), simvastatin (1 mg/kg) plus cisplatin treated group (i.p., once daily for 7 days before and after cisplatin injection), and simvastatin (2 mg/kg) plus cisplatin treated group (i.p., once daily for 7 days before and after cisplatin injection). Blood samples were collected and used to determine the serum urea, creatinine and total antioxidant status (TAS) levels. kidneys were removed and prepared for histopathological examinations.
Results: In simvastatin plus cisplatin treated groups serum urea and creatinine were significantly lower than those of cisplatin-treated group, While serum TAS was increase. These changes occurred in a dose-dependant manner (simvastatin). Histopathological examinations showed a massive damage in the proximal tubules in cisplatin-treated group. No damage was observed in simvastatin treated groups.
Conclusion: These data show that simvastatin can provide a protective effect against Acute cisplatin-induced nephrotoxicity. This protective effect of simvastatin may be related to the antioxidant status on the kidney.