The antioxidant activity of Vitamin C, DPPD and L-cysteine against Cisplatin-induced testicular oxidative damage in rats

Emad A. Ahmed, Hossam M. Omar, Sary Kh Abd elghaffar, Sohair M.M. Ragb, Ahmed Y. Nasser

Abstract:

Oxidative stress has been proven to be involved in cisplatin (CP)-induced toxicity. The present study was designed to evaluate the antioxidant activity of Vit C, N,N0-diphenyl-p-phenylenediamine (DPPD) and L-cysteine against CP-induced testicular oxidative damage in rats. Our data indicated significant increases in lipid peroxides (LPO), total peroxides and superoxide anion levels in testes of rats treated with CP (2 mg/kg/week, for 4 weeks) that was associated with a significant reduction in the activity of the antioxidant enzymes superoxide dismutase (SOD), catalase (CAT) and glutathione S-transferase (GST). The contents of glutathione (GSH), Vit E and Vit C were significantly lower in CP treated testes compared with those of control. The co-administration of CP with DPPD or L-cysteine significantly reduced the elevation in LPO, however the co-administration of CP with Vit C, DPPD or L-cysteine reduced the effect of CP on superoxide anion and antioxidant enzymes and also on the antioxidants contents. The administration of Vit C, DPPD or L-cysteine before CP injection improved the histological pictures and reduced the number of apoptotic cells and DPPD was more efficient. In conclusion, DPPD is a potent antioxidant, against CP-induced testicular oxidative damage, as compared with Vit C and L-cysteine.

Keywords:
Testis Oxidative stress Apoptosis Antioxidants Cisplatin

Published In:

Food and Chemical Toxicology, Vol. 49, PP. 1115–1121