

Biochemical Studies on Nephroprotective Effect of Carob (Ceratonia siliqua L.) Growing in Egypt

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Abstract :

Reactive oxygen species and free radicals are involved in the nephrotoxicity induced by the

synthetic anticancer drug cisplatin. The nephroprotective effect of carob pods and leaves (100 and 200 mg/kg, p.o.) was investigated using cisplatin (10 mg/kg body weight, i.p.) to induce oxidative renal damage in mice. The results showed that cisplatin administration caused abnormal renal functions in all studied mice. Serum urea and creatinine concentrations were significantly highered ($P < 0.5$) in the cisplatin alone treated (control) group compared to the normal group. The concentrations of serum creatinine and urea in the carob pods (200 mg/kg body weight) treated group were reduced to 57.5% and 51.5%, respectively, with respect to the control group. Also, cisplatin induced decline of renal antioxidant enzymes such as superoxide dismutase (SOD), catalase (CAT), glutathione peroxidase (GPx) activities, but the treatment of carob pods and leaves (100 and 200 mg/kg, p.o.) significantly attenuated the cisplatin-induced nephrotoxicity. Both pods and leaves of carob at 100 and 200

mg/kg increased the concentration of reduced glutathione (GSH) and protected against the increase of cisplatin-induced lipid peroxidation. In addition, treatment with cisplatin increased the activity of cathepsin D, RNase II, DNase II and acid phosphatase. The treatment of carob pods and leaves (100 and 200 mg/kg, p.o.) improved the activity of lysosomal enzymes nearly to the normal group. In conclusion, carob pods and leaves may be effective to protect from oxidative renal damage and the leaves are the better nephroprotective agent than pods. The protection may be mediated partially by preventing the decline of renal antioxidant statuses. [Nature and Science 2010;8(3):41-47]. (ISSN: 1545-0740).

Key Word :

nephrotoxicity; carob; cisplatin; antioxidant enzymes; lysosomal enzymes

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