Mg supplementaion reduces cadmium-renal toxicity in rats

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Cadmium is an industrial and environmental pollutant that was shown to be involved in the development of lung, kidney, pancreas, breast and prostate cancers and specially in renal injuries.

The present study was, therefore, carried out to determine whether magnesium supplementation could have a protective effect against the Cd-induced oxidative stress in kidneys of adult male rats. Cd-induced stress was evaluated by measuring the levels of biochemical parametrs (creatinine and urea), of lipid peroxidation (TBARS) and the determination of renal histological changes.

Wistar rats weighting about 100 g were randomly divided into four groups : the control group (C) was administrated with saline. The treated groups were either injected only with 2.5 mg $CdCl_2$ (13.7 mM), i.e. 1.5 mg Cd element/kg body weight for 10 days (Cd) or injected only with 2.5 mg $CdCl_2$ associated to 300mg MgSO4/kg body weight (Mg1+Cd) or 600mg $MgSO_4$ (Mg2+Cd).

Administration of cadmium intraperitoneally for 10 days increased significantly ($p < 0.05$) the levels of serum renal markers (creatinine and urea) and lipid profile (TBARS). When Cd-treated rats were also injected with magnesium, these increases were found to be much lower in the kidney. The cadmium induced histopathological changes were also minimized with the magnesium supplementation.

These results suggest that Mg supplementation might play a role in reducing the toxic effect of Cadmium and its antioxidant properties seem to mediate such a protective effect.

Key words: Cadmium, Mg, Oxidative stress, TBARS, Kidney.