

Protective effects of vitamin C against oxidative stress induced by diethylene glycol in liver and kidney

Abstract---

This study aims to investigate the vitamin c protective influence against oxidative stress, liver and kidney destructions made by diethylene glycol in rabbit model. Eighteen healthy male rabbits were grouped into 3 classes. Control group: without any treatment. DEG group were treated with 40 mg /kg /day of DEG for 14 days while DEG with vitamin C group with 40 mg /kg /day of DEG with 10mg /kg/day of vitamin C for 14 days. All animals were euthanized at day 14 of the study. Venous blood samples (5ml) were collected from rabbits via jugular vein and serum samples were isolated and kept at -20 °C till time of analysis. Serum analysis was done by colorimetric Assay kit for total antioxidant capacity (TAC). Tissue samples from liver and kidneys were isolated, pigmented by hematoxylin and eosin (H & E) pigments and investigated under a light microscope for histopathological changes. Results: The TAC in the treatment group was significantly reduced at 14th day of study when compared to the other groups. While non- significant differences were found between control and treatment with vitamin C groups. Control sections of the liver and kidney have normal histological structure while tissue sections of treatment group appeared to have large zone of necrosis with suppuration surrounded by fibrosis and inflammation. Sections from treatment with vitamin C group appeared to have mild pathological changes. Conclusion: DEG (40 mg / kg /day) for 14 days can result a decrease in TAC with noticeable destructive changes in tissues of liver and kidneys in rabbits. Vitamin C has a useful effect as a good hunter for oxygen free radicals. It keeps the physiological integrity of tissues and decreases toxic effects.