MODIFYING EFFECT OF VITAMIN E ON ADRIAMYCIN AND CYCLOPHOSPHAMIDE INDUCED GENOTOXICITY AND ANTIOXIDANT STATUS IN RATS

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Abstract. In the present study, we have evaluated the protective effect of vitamin E (VE) against adriamycin (AD) and cyclophosphamide (CP) induced genotoxicity using chromosome aberration and micronucleus assays in Wistar rat bone marrow cells. The level of lipid peroxidation product malondialdehyde, the activity of antioxidant enzymes catalase and superoxide dismutase were measured in blood serum and erythrocyte hemolysate to evaluate the antioxidant status in rats. VE (250 mg/kg body weight, b.w.) was administered *via gavage* once a day for 3 consecutive days. Single dose of AD (5 mg/kg b.w.) or CP (30 mg/kg b.w.) was delivered by the intraperitoneal route. Pre-treatment of rats with VE was conducted for two days before AD or CP injection and concomitantly with AD or CP on the 3rd day. VE was administered concomitantly with AD or CP injection on the 1st day and for two consecutive days in the post-treated groups. No beneficial effect of VE on the antioxidant status of rats was determined. VE decreased drug induced bone marrow toxicity in all experimental groups. Protective effect of VE against AD- and CP-induced genotoxicity was dependent on the treatment schedule (i.e. sequencing of VE treatment). VE was protective against AD-induced chromosome damage in animals pre-treated with VE (both chromosome aberration and micronucleus assays) and against CP-induced damage in animals post-treated with VE (micronucleus assay only).

Keywords: vitamin E, adriamycin, cyclophosphamide, chromosome aberration, micronucleus, rats.