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PROTECTIVE ROLE OF VITAMIN E AND COENZYME Q₁₀ ON BLOOD LP CONCENTRATION AND GST ACTIVITY IN RATS AFTER ACUTE AND CHRONIC CADMIUM INTOXICATION

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In our experiments male two months old *Wistar albino* rats were used. In the experiment with acute Cd intoxication animals were injected with (1) Cd (0.4 mg CdCl₂/kg b.m., i.p., 24^h before the sacrificing), (2) Vitamin E+Coenzyme Q₁₀+Cd (20 IU Vit E/kg b.m., i.m., 48^h before the sacrificing + 20 mg CoQ₁₀/kg b.m., i.m., 48^h before the sacrificing + 0.4 mg CdCl₂/kg b.m., i.p., 24^h before the sacrificing). Third group (3) was control (C). In the experiment with chronic Cd intoxication the animals were treated as follows: (1) Cd (14 mg/day/kg b.m. CdCl₂ in drinking water during 15 days (Cd), (2) Vit E+CoQ₁₀+Cd (pretreated with 20 IU/kg/dose of Vit E and 15 mg/kg/dose of CoQ₁₀ i.m., every fifth day during 15 days and then treated with 14 mg/day/kg b.m. of Cd during next 15 days Third group (3) was control (C). After the treatment the rats were sacrificed by decapitation and blood samples were collected and analyzed. In the blood of rats the concentration of lipide peroxides (LP) were evaluated, while the activity of glutathione-S-transferase was assayed in the plasma after separation from the blood cells.

The results obtained in our experiments show that acute treatment with Cd leads to the significantly increased LP concentration ($p < 0.01$) in the blood of rats in respect to the control animals. Pretreatment with Vit E+CoQ₁₀ pryor to Cd exposure normalized the concentration of LP in the blood. Contrary to that, in chronic Cd intoxication concentration of LP was significantly decreased ($p < 0.005$) in comparison to the control value. Pretreatment with Vit E+CoQ₁₀ pryor to Cd intoxication influences an additional decrease of LP concentration ($p < 0.005$) compared with controls. It appears that in chronic Cd treatment the period of 15 days is sufficient for the development of efficient red blood cell protection against Cd (per)oxidative damage.

The activity of GST in the plasma of rats acutely treated with Cd was significantly increased in respect to the controls ($p < 0.02$). Pretreatment of rats with Vit E+CoQ₁₀ influenced a significant decrease of GST activity in the plasma ($p < 0.05$). Similar results were obtained with chronic Cd intoxication where Cd induces a significantly higher activity of GST in the plasma ($p < 0.01$), while pretreatment with Vit E+CoQ₁₀ reversed this value to the control level.

From the presented results, it can be concluded that Cd both in acute and chronic intoxication influences blood LP concentration and plasma GST activity. Pretreatment with antioxidants, such as Vit E and CoQ₁₀ diminishes the toxic effects of Cd on both evaluated parameters. At the same time, we were also noticed a different mechanisms of defence against Cd toxicity in acute and in chronic intoxication, especially in the case of blood LP concentration.