

Abstract

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Elements of oxidation/reduction balance in experimental hypothyroidism.

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BACKGROUND: The aim of this study was to investigate the effect of the decreased level of thyroid hormones on selected parameters of the oxidation/reduction balance by assessing the activity of antioxidant enzymes: superoxide dismutase (SOD), and glutathione peroxidase (GSH-Px); the level of antioxidant vitamins (A, C, and E); and the concentration of compounds reacting with thiobarbituric acid (TBARS).

MATERIAL AND METHODS: Investigations involved 20 Belgian giant rabbits of both sexes. Hypothyroidism was induced by intragastric administration of thiamizole. Before this was done, blood was collected from the ear marginal vein (control group) and then the animals received thiamizole through an intragastric tube at a dose of 2 mg/kg b.w. for 21 days. Blood was collected again (the experimental group) and the following determinations were performed: - in blood serum, the thyroid hormones T3, T4 and TSH; - vitamin A, C and E blood serum concentrations; - in erythrocytes, the concentration of compounds reacting with TBARS, SOD and GSH-Px.

RESULTS: A 21-day exposure of rabbits to thiamazole (2 mg/kg b.w./24 h) resulted in a statistically significant decrease of TBARS, a decrease of SOD and GPH-Px activity and in a statistically insignificant decrease in the level of vitamins A, C and E.

CONCLUSIONS: Hypothyroidism decreases the level of erythrocytes oxidation/reduction balance by diminishing oxidative lipids damage and by decreasing the activity of antioxidative enzymes, but not by changes in the level of antioxidant vitamins.

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