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►98

VARIATIONS OF SEVERAL SALIVARY AND ERYTHROCYTE ENZYMES ACTIVITY DURING DIFFERENT FORMS OF PERIODONTAL DISEASES

M. PAVEL, L. FOIA, I. IACOBVICI, N. COSTULEANU

University of Medicine and Pharmacy "Gr. T. Popa", Iasi, Romania

Considering that the main disorders located on the periodontal level, consist of the inflammatory periodontal diseases, these will induce support tissues injuries on the teeth level, with secondary biochemical modifications occurrence, further revealed at blood and saliva level. The facts that anaerobic glycolysis represents the main erythrocyte energetic source by lactate end-product generation, while pentose phosphate pathway is the NADPH generator, absolutely indispensable for these cells, are already well-known.

These represent some of the reasons that lied on the basis of performing the present study, in which we aimed the studying of the main metabolic pathways enzymatic changes, with great significance for the erythrocytes, and especially the glucose metabolism.

We have monitored the glycolytic process by LDH level, and the oxidative pathway of metabolization through pentose phosphate pathway, by G-6-P-DH activity behavior. Owing to decreased basal activity of G-6-P-DH, this could increase spontaneously, at high levels, in response to oxidative stress. Furthermore, Pandolfi and coworkers have already assessed the major role of G-6-P-DH in cell protection, against oxidative stress.

There are also other well-known enzymatic systems capable of protection against oxidant agents, among which catalase is one of the most representative. These enzymatic activities (LDH, G-6-P-DH and catalase) have been investigated by spectrophotometrical techniques, within saliva and erythrocytes as well, on several patients with periodontal diseases. Both LDH and G-6-P-DH activities were found elevated within erythrocytes and saliva. The activity of erythrocyte's catalase decreases on patients with periodontal diseases. Changes in the activity of the mentioned enzymes represent a method for the evaluation of the degree of destructive processes, during oral cavity disorders.

I. P. P. Pandolfi, F. Sonati, R. Rivi, P. Mason, F. Grosveld, L. Luzzato, *EMBO J.*, 14, 5209-5215 (1995).

►99

ANTIOXIDANT ENZYME ACTIVITIES IN THE BLOOD OF RATS TREATED WITH COENZYME Q₁₀

S. Z. PAVLOVIC¹, B. I. OGNJANOVIC², A. STAJN², R. V. ZIKIC², Z. S. SAICIC¹, V. M. PETROVIC¹

¹*Institute for Biological Research "Sinisa Stankovic", Department of Physiology, 29, Novembra 142, 11060 Belgrade, Serbia, Yugoslavia*

²*Institute of Biology, Faculty of Sciences, University of Kragujevac, Kragujevac, Serbia, Yugoslavia*

The aim of our study was to investigate the effects of coenzyme Q₁₀ (CoQ₁₀) administration on antioxidant enzyme activities in the blood of male, two months old *Wistar albino* rats. We measured the activities of copper zinc containing superoxide dismutase (CuZn SOD), catalase (CAT) and glutathione peroxidase (GSH-Px) in red blood cells (RBCs), as well as glutathione-S-transferase activity in the plasma.

The animals were divided in two experimental groups: (1) control rats (C) and (2) rats treated with 20 mg/kg/dose of coenzyme Q₁₀ by i.m. injections, every fifth day during 30 days (CoQ₁₀). An average intake of CoQ₁₀ was 16 mg/kg/dose. After the treatment, the animals were exanguinated by decapitation always between 8 and 10 A.M. and fresh blood was collected in heparinized test tubes.

The obtained results show that CoQ₁₀ did not influenced the activities of CuZn SOD and CAT in RBCs of rats. By quenching organic oxygen-derived free radicals CoQ₁₀ protects GSH-Px and activity of this enzyme molecule in RBCs of rats treated with CoQ₁₀ was significantly decreased in comparison to the control animals ($p < 0.05$). After the treatment of rats with CoQ₁₀ the activity of GST in the plasma was significantly elevated in respect to the controls ($p < 0.02$).

Our findings confirm the results of earlier investigations, which were also showed that CoQ₁₀ causes an increased activity of GST, and thus improve defense from oxidant injuries in normal and pathophysiological conditions.