

322. STATE OF GLUTATHIONE REDUCTASE – GLUCOSE-6-PHOSPHATE DEHYDRO-GENASE SYSTEM IN SALIVA OF STUDENTS FROM DIFFERENT COUNTRIES

Denis Cravcenco, Valerii Crusilinschii

Scientific adviser: Nina Sevcenco, MD, PhD, Associate Professor, *Nicolae Testemitanu* State University of Medicine and Pharmacy, Chisinau, Republic of Moldova

Introduction. Reduced glutathione performs a protective antitoxic and antioxidant role. The only enzyme, whose basic biological significance to maintain a high level of reduced glutathione is glutathione reductase. Normal functioning of glutathione requires coenzyme NADPH, which generates aerobic glucose oxidation pathway (pentose phosphate pathway) through the action of glucose-6-phosphate dehydrogenase. The amount of glutathione varies, so a pathological insufficiency of it was observed at a third of the population. Genetic and biochemical studies have demonstrated the important role of glutathione and glutathione-dependent enzymes, which control the intracellular redox-state, inactivate oxygen radicals, protect from oxidative stress.

Purpose. Comparative analysis of the glutathione reductase – glucose-6-phosphate dehydrogenase state in saliva of students from different countries.

Material and methods. The study involved 46 healthy students (20-23 years): Moldova (group 1), Israel (group 2), Palestine (group 3), Congo (group 4). The study complied with all ethical and legal norms. The activity of glutathione reductase (GR), glucose-6-phosphate dehydrogenase (G6PD), content of reduced glutathione (RG) and protein were determined by spectrophotometry (DiaSys). Statistics: t-Student and Spearman.

Results. The content of RG in the saliva of 2nd group was 33,49 mcmol/g protein (185,6%; $p < 0.01$), in the 3rd – 10,1 mcmol/g (56%) and in the 4th – 40,30 mcmol/g (223,4%; $p < 0,001$) compared with the 1st group (18,04 mcmol/g, 100%). Activity of GR in the saliva of 1st group was 12,0 IU (100%), in the 2nd group - 20,6 IU (171,7%), in the 3rd – 38,3 IU (319,2%), in the 4th group - 29,1 IU (242,5%). Activity of G6PD in the 1st group was 6,6 IU/l (100%), in the 2nd – 18,7 IU/l (283,3%), in the 3rd – 8,9 IU/l (134,8%), in the 4th group - 13,1 IU/l (198,5%). The results of Spearman's rank correlation analysis showed a close relationship between GR and G6PD in 1st, 2nd and 4th groups. However, the functional relationship between the GR and RG was only found in the third group ($Pt < 0,0025$).

Conclusion: The differences between the content of GR and level of G6PD activity in the saliva of the students from different countries likely reflect the genetically determined metabolic features. Correlation analysis using the nonparametric Spearman test showed functional relatively close relationship between all the parameters considered, which may indicate modifications of metabolic processes in the growing organism.

Keywords: reduced glutathione, glutathione reductase, glucose-6-phosphate dehydrogenase, saliva.