

## **Oxidants and antioxidants of erythrocytes**

Łapiński R. \*, Siergiejuk M., Worowska A., Gacko M.

Department of Vascular Surgery and Transplantology, Medical University of Bialystok, Poland

### **ABSTRACT**

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Erythrocytes contain reactive forms of oxygen (superoxide anion, hydrogen peroxide, hydroxyl radical) and reactive form of nitrogen (nitric oxide anion, S-nitrosothiols, peroxynitrite anion). Reactive oxygen species and reactive nitrogen species inactivate enzymatic (methemoglobin reductase, Cu, Zn-Superoxide dismutase, catalase, glutathione peroxidase) and non-enzymatic (glutathione, alpha-tocopherol, beta-carotene, ascorbate) antioxidants. Their quantity in erythrocytes increases in case of exposure to xenobiotics, in erythrocytes containing pathological hemoglobin, in erythrocytes with the enzymatic

defects of the glycolytic or pentose cycle, in erythrocytes found in arterial and venous thrombi, and in the blood extravasated to tissues and body cavity. In such cases are observed in erythrocytes: structure modification of hemoglobin and membrane proteins, and lipids peroxidation. These processes cause changes of shape, decrease of flexibility, decrease of resistance to hemolysis, Heinz's bodies production and shorten the life span of red cells.

**Key words:** Erythrocytes; reactive oxygen species; reactive nitrogen species; antioxidants.

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