

VITAMIN B6 SLIGHTLY AFFECT CARDIAC OXIDATIVE STRESS AND HISTOLOGICAL MARKERS IN MONOCROTALINE-INDUCED RAT HEART FAILURE

Jovana Jakovljevic Uzelac¹, Tatjana Djukic², Sanja Stankovic³, Jelena Rakocevic⁴, Natasa Milic⁵, Ana Savic- Radojevic² and Dragan Djuric¹

¹*Institute of Medical Physiology "Richard Burian", Faculty of Medicine, University of Belgrade, Belgrade, Serbia*

²*Institute of Medical and Clinical Biochemistry, Faculty of Medicine, University of Belgrade, Belgrade, Serbia*

³*Center for Medical Biochemistry, University Clinical Centre of Serbia, Belgrade, Serbia*

⁴*Institute of Histology and Embryology "Aleksandar Dj. Kostic", Faculty of Medicine, University of Belgrade, Belgrade, Serbia*

⁵*Institute of Medical Statistics and Informatics, Faculty of Medicine, University of Belgrade, Belgrade, Serbia*

Heart failure (HF) induced by monocrotaline (MCT) is well-known by the pulmonary arterial vessels remodeling mechanisms with increased pulmonary resistance and oxidative stress markers. The purpose of this study was to validate the hypothesis that four week treatment with vitamin B6 could affect HF by modulating oxidative stress biomarkers, and structure of the rat heart. The male Wistar albino rats were divided in 3 investigated groups: blank solution-exposed control (C, physiological saline 1 ml/kg 28 days ip., n=8), B6 (vitamin B6 7 mg/kg/day 28 days ip., n=8), and MCT+B6 (MCT 50 mg/kg once ip. plus vitamin B6 7 mg/kg/day 28 days ip., n=8). Activities of enzymes, superoxide dismutase (SOD) and glutathione peroxidase (GPX), glutathione content, parameters of oxidative damage of proteins, thiol- and carbonyl groups, nitrotyrosine content, and total S-glutathionylation, as well as histomorphometric and certain immunohistochemical parameters of rat cardiac tissue were determined. The activity of antioxidant enzymes, superoxide dismutase (SOD) and glutathione peroxidase (GPX) did not change, whereas the total glutathione (GSH) was significantly decreased in the MCT+B6 group. This was followed by slightly decreased level of the total glutathionylation observed in the MCT+B6 group. The parameters of protein oxidative damage (reactive carbonyl derivatives, thiol groups and nitrotyrosine) did not significantly change in the MCT+B6 group. There was observed an increasing trend in right ventricle and left ventricle wall thickness in the MCT+B6 compared with C and B6 groups as well as in immunohistochemical markers of cell proliferation (Ki67 and PCNA) positivity.

Keywords: Heart failure, Monocrotaline, Vitamin B6, Oxidative stress, Rat