

**THE INFLUENCE OF FRUIT EXTRACTS OF DIFFERENT CULTIVARS OF THE CORNELIAN CHERRY ON ACTIVITY OF ANTIOXIDANT DEFENCE SYSTEM OF ERYTHROCYTES IN RATS WITH DIABETES MELLITUS**

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Diabetes mellitus (DM) and oxidative stress are closely related. In particular, the intensification of non-enzymatic oxidation of hemoglobin to methemoglobin in erythrocytes in DM leads to the overproduction of reactive oxygen species, which deplete the content of antioxidants, resulting in oxidative stress. Marker indicators of oxidative stress development are impaired enzymes of antioxidant defense [4]. To prevent diverse disorders in the body due to the progression of oxidative stress, scientists are actively searching for new natural medicines based on plant raw materials. Cornelian cherry (*Cornus mas* L.) is a perspective medicinal plant. Every day, new cultivars of cornelian cherry are being developed [2]. However, it is crucial not only to create new cultivars but also to analyze their biological properties. Additionally, it is necessary to select those cultivars that have stronger characteristics than the previously created ones. Therefore, the aim of the study was to investigate the effect of fruit extracts derived from the 'Uholok' and 'Koralovyi' cultivars of *Cornus mas* L. and a mix of two hybrids of *Cornus mas* × *Cornus officinalis* 'Jerzy' and 'Tomasz' cultivars on the activity of antioxidant enzymes – superoxide dismutase, catalase and glutathione peroxidase and the level of principal antioxidant – reduced glutathione in erythrocytes of rats with streptozotocin-induced diabetes.

Type 1 DM was induced in animals by intraperitoneal administration of streptozotocin (55 mg/kg of bw). Experimental animals were divided into 5 groups: 1) control group; 2) rats with DM; 3) rats with DM that were orally administered fruit extract from the 'Uholok' cultivar of cornelian cherry; 4) rats with DM that were *per*

*os* administered fruit extract from the 'Koralovyi' cultivar of *Cornus mas* L.; 5) rats with DM that were orally administered extract from fruits of two hybrids of *Cornus mas* × *Cornus officinalis* 'Jerzy' & 'Tomasz' cultivars. The animals of the third-fifth groups were treated with the extracts of cornelian cherry at a dose of 20 mg per 1 kg of b.w. for 14 days, starting from the 10<sup>th</sup> day of the DM induction. The dosage of extracts administration was based on the previous research [1, 3]. On the 25<sup>th</sup> day of the experiment, all rats were decapitated with ether anesthesia.

Our results showed a significant decrease in the activity of superoxide dismutase, catalase, and glutathione peroxidase, and the content of reduced glutathione in erythrocytes of rats with streptozotocin-induced diabetes. The administration of fruit extracts from the 'Uholok' cultivar of *Cornus mas* L. and the hybrids of *Cornus mas* × *Cornus officinalis* 'Jerzy' & 'Tomasz' cultivars led to a 1.8 and 2.1-fold increase in the activity of superoxide dismutase, respectively. Significant increases in the catalase activity (by 2.0 and 1.6 times) were observed in blood erythrocytes of rats with DM, that were treated by fruit extracts from the 'Uholok' cultivar and the hybrids. Also, we revealed a notable rise in the glutathione peroxidase activity and the level of reduced glutathione were detected in diabetic rats that were administered all studied extracts of cornelian cherry.

So, the fruit extracts from the 'Uholok' and 'Koralovyi' cultivars of *Cornus mas* L. and a mix of two hybrids of *Cornus mas* × *Cornus officinalis* 'Jerzy' and 'Tomasz' cultivars defend antioxidant enzymes of erythrocytes from reactive oxygen species. Presumably, this can be linked with a considerable content of biologically active substances, such as iridoids, anthocyanins, hydrolysable tannins, flavonols, and phenolic acids of extracts that might scavenge reactive molecules under diabetes 1 type.

### **References**

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**MUTUAL INFLUENCE OF RARE EARTH ELEMENTS AND  
Ca-CHANNEL BLOCKER ON THE BIVALVE MOLLUSCS**

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Rare earth elements (REE) are considered "strategic elements", because in many modern technologies, including military industry, it is impossible to replace them with other elements due to their unique properties [4]. Consequently, rising of their entry into the surface waters from anthropogenic sources can be expected. Knowledge about the biological role of REEs is currently rather fragmentary and