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**EFFECT OF MELATONIN ON AGE-RELATED CHANGES OF GLYCATED HEMOGLOBIN CONTENT IN THE BLOOD OF ALLOXAN DIABETIC RATS**

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Melatonin and its metabolites have potent antioxidant/anti-inflammatory properties, and they have proven to be highly effective in a variety of disorders linked to inflammation and oxidative stress. The increasing incidence of type 1 diabetes coupled with advances in treatment of type 1 diabetes has resulted in an unprecedented number of older adults living with and managing type 1 diabetes. Hyperglycemia-mediated oxidative stress plays a crucial role in diabetic complications. The consequence of the emergence of this shift can be the appearance of age features in the body's resistance to harmful factors of diabetes mellitus. Changes in the ontogenesis of sensitivity of the glycosylated hemoglobin content in the blood on the background of diabetes mellitus and melatonin injections are less studied.

The object of this experimental research was to ascertain the influence of melatonin on the background of aging on the level of glycemia and glycosylated hemoglobin content in the blood of alloxan diabetic rats. We used male Wistar rats, two age groups: the I - 2-month (late puberty), and II - 4-month (adult). Alloxan diabetes was evoked via injecting the rats with a 5% solution of alloxan monohydrate intraperitoneally in a dose of 170 mg/kg. In each age group were control rats and diabetic animals which were introduced the melatonin ("Sigma", USA) preparation intraperitoneally in a dose of 10 mg/kg of body weight at 8 a.m. daily during 42 days starting with a 5-th 24 hour period after the injection of alloxan. Blood was taken from the tail vein to evaluate the glycemia level on 5-th and the 47-th day after the injection of alloxan. Rats were sacrificed on the 47-th day of the experiment in accordance with the ethical treatment of animals. Determination of the glycosylated hemoglobin content in whole blood (HbA<sub>1c</sub>) was performed using a biochemical analyzer ("Bio-Rad Laboratory Inc.", France).

The level of glucose on the fifth day of the experiment in animals of both groups increased on average by 116% compared to control. However, on the 47-th day, this index was higher in the group of old rats by 22% more than in adult rats. HbA<sub>1c</sub> content in erythrocytes of adult and old animals with overt diabetes increased by 177% and 190%, respectively compared with the control. The changes may be the result of age-related disorders of energy metabolism due to disturbances in free radical mechanisms. Moreover, hyperglycemia leads to increased free radical mechanism in old rats. We have reached the recovery of the HbA<sub>1c</sub> content in the blood of diabetic rats of both age groups by melatonin injections. These results are consistent with the degenerative role of hyperglycemia on cellular reducing equivalent homeostasis and antioxidant defense, and provide further evidence that pharmacological intervention of antioxidants may have significant implications in the prevention of the prooxidant feature of diabetes and protects redox status of the cells. ROS reacts with some amino acid, producing anything from modified, denatured and non-functioning proteins that in further may be responsible for oxidative stress.

Thus, we have determined that there is a change in the course of ontogenesis the content of the HbA<sub>1c</sub> in the blood to the effect of diabetes mellitus factors. According to the results we've got, melatonin shows its protective action against hyperglycemia-induced age-related changes of the HbA<sub>1c</sub> content in the blood of alloxan diabetic rats.

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**CHRONORHYTHMS OF TOTAL ANTIOXIDANT ACTIVITY OF RAT SERUM UNDER DIFFERENT FUNCTIONAL ACTIVITY OF EPIPHYSIS CEREBRI**

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The role of melatonin as a universal pacemaker of human biological rhythms has long been known. The physiological and biochemical parameters of the organism depend on the functional