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## ***Ganoderma lucidum* extract normalizes the concentration of sialic acids in erythrocytes and blood plasma of rats with experimental metabolic syndrome**

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**Introduction.** Increasingly, researchers note oxidative stress among the pathophysiological factors of the metabolic syndrome (MetS) [1]. Oxidative stress causes peroxidation of erythrocyte membrane lipids with subsequent desialylation, which leads to an increase in the concentration of sialic acids in the blood plasma and causes the aggregation of these cells [2]. Many studies indicate that the substances obtained from the medicinal mushroom *Ganoderma lucidum* (polysaccharides, triterpenoids, polyphenols) have a high antioxidant potential [3], and therefore, the work aimed to investigate the ability of *G. lucidum* extract to influence the number of erythrocytes and their precursors, as well as the concentration of sialic acids in erythrocytes and blood plasma under experimental MetS.

**Methods.** In experimental studies, an extract of the mycelium of the mushroom *Ganoderma lucidum* was used, which was administered *per os* in a dose of 1 g/kg of the animal's body weight for 14 days. The research was conducted on white male Wistar rats. MetS was induced by a high-carbohydrate diet: for 42 days animals consumed a 10% fructose solution instead of drinking water. Rats were randomly divided into four groups (there were 8 animals in each group): control animals; animals with experimental MetS; control animals and animals with MetS, which were administered with the studied extract. The number of erythrocytes was counted in a hemocytometric chamber using 0.9% NaCl. The number of reticulocytes was determined using a brilliant cresyl blue solution followed by additional staining according to Romanovsky-Giemza. The concentration of sialic acids in plasma and erythrocytes was determined using the analytical kit "Philisit-Diagnostics". **Results.** MetS is accompanied by a 14.7% increase in the number of erythrocytes, a 2.6-fold increase

in the number of reticulocytes, and a 2.3-fold increase in the daily production of reticulocytes compared to the controls. The consumption of *G. lucidum* extract resulted in the return of these three indicators to normal. Under the conditions of experimental MetS, the concentration of sialic acids in blood plasma increased by 43.0%, and in erythrocytes decreased by 21.7%, compared to the control animals. Administration of the extract to sick animals caused a decrease in the concentration of sialic acids in plasma by 17.0% and a return of their concentration in erythrocytes to normal values. **Conclusions.** We found a positive corrective effect of *G. lucidum* extract on the concentration of sialic acids in erythrocytes and blood plasma of rats. The obtained results demonstrate the promising use of this medicinal mushroom for the correction of dysfunction of the blood system under MetS.

**Keywords:** metabolic syndrome, *Ganoderma lucidum*, sialic acids.

### REFERENCES

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