TREATMENT OF EXPERIMENTAL DIABETES WITH A BIOLOGICALLY ACTIVE SUPPLEMENT

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The purpose of the study: *correction of morphological changes in the liver in diabetes using a natural biologically active food supplement (NBAFS).*

Research material . ***"Shifo*** *" natural biologically active food supplement (NBAFS) was used to restore morphological changes in the liver in experimental diabetes .*

Research design . *In the study* , 120 white adult rats weighing 180-220 g were used in the laboratory of the Institute of Biorganics, fed on a standard diet . All animal studies were conducted in accordance with WHO recommendations regarding the use of experimental animals and precautions. The experiments were carried out on healthy, male white laboratory rats with a body weight of 180 ± 20 g, which were quarantined for 10-14 days. The animals are the following five: Group I – negative control (healthy); Group II alloxan +metformin pharmacopoeia drug; Group III (alloxan + Shifo NBAFS); IV group (alloxan +As-GAM NBAFS); Group V - positive control (alloxan + dis. water); consists of the included groups of animals. The diabetes model was induced by intraperitoneal injection of alloxan at a dose of 130 mg/kg of animal body weight.. Animals were fasted for 24 s to induce diabetes. During the experiment, the amount of glucose in the blood of the animals was measured. Diabetic animals were selected for the experiment and infusions of the researched drugs Shifo NBAFS - 100 mg/kg, As-GAM NBAFS - 100 mg/kg and the comparative drug metformin at a dose of 50 mg/kg were administered for treatment for 21 days. Shifo and As-GAM biologically active food additives were measured in doses of 100 mg/kg and injected into the stomach of rats using a special probe after boiling for 5 minutes and cooling at room temperature. The rats of the positive control group were given an equal volume of distilled water for 14 days.

Morphological changes in liver tissue were studied after 15 days of " Shifo" NBAFS - 100 mg/kg drug was administered to rats with experimental alloxan diabetes. According to the obtained results, the following were determined. Liver capsule was of average normal thickness, average fullness of its vessels was found. In the histioarchitectonics of the liver, mainly dystrophic and poorly formed sclerotic changes were detected. No drastic changes were detected in the lobes of the liver, mainly in the perilobular branches of the lobes, dystrophically changed hepatocytes with medium and

small droplets of fat are detected. Hepatocytes with fatty dystrophic changes have increased in size and the sinusoids in these branches are narrowed. Moderate fullness in perilobular vein blood vessels, weakly formed interstitial edema in perivascular branches, and a small number of infiltration of lymphocytes in the focus are determined. In the medial and centrolobular branches of the lobes, foci of fatty dystrophy with small drops in hepatocytes and eosinophilic bodies are detected in the cytoplasm of hepatocytes in the foci near the central veins. It is found that sinusoids are expanded toward the center, and perisinusoidal spaces are similarly expanded toward the center. Acute focal migration of Kupffer cells and foci of infiltration were not detected. Hepatocytes with 2 nuclei are mainly found in perilobular branches. Given that hepatocytes in the perilobular area are rich in MOS enzymes, detoxify and are the first to receive metabolites from the blood plasma, the main dystrophic changes are detected in these hepatocytes.

Morphological changes in the liver of experimental rats of the 2nd group of the study were reported by R.G. Knoudell et.al. (1996) evaluation based on criteria:

A. Degree of dystrophic changes in hepatocytes: 2 points.

B. Level of development of necrosis in the liver parenchyma: 0 points.

V. Level of development of lymphoid infiltration:

- less than 1/3 portal tracts -1 point;

G. The degree of development of sclerosis:

- Expansion of portal tracts due to fibrosis - 1 point;

D. Level of hepatocyte regeneration: 4 points.

Total: 8 points.

Criteria for evaluating the degree of fibrosis of the morphological changes in the liver of experimental rats of the 2nd group of the study

Developed morphological units	**METAVIR**	**Isaac**
Fibrosis no	F0	0
Portal fibrosis of multiple portal tracts	F1	1
Portal fibrosis of many portal tracts	F0	0

Several bridging fibrous barriers	F1	1
Many bridging fibrous barriers	F0	0
T ' incompletely formed ts irroz	F0	0
Fully formed ts irroz	F0	0
Score on total accumulated morphological units	1	1

Discussion. No signs of cholestasis were detected in rats given Shifo NBAFS, which was used to treat diabetic model rats. The fact that the sinusoidal spaces in the slices are of the same width, the radial structure of the hepatocytes in the slices is of the same size compared to those in the other groups, and the number of 2-nuclear hepatocytes has increased, means that the reparation process is moving in a positive direction.

In the first days of the development of diabetes, the amount of glucose in the blood increases[1]. In the case of chronic hyperglycemia, the content of Sa^{+2} ions in the mitochondria increases, which leads to a violation of cell function. Increased sensitivity of the liver to glucose leads to the breakdown of mitochondria[2,3].

Diabetes is accompanied by an imbalance of lipids in the blood and an increase in the amount in the liver[4,5,6].

Summary. Therefore, based on the above morphological changes, the use of "Shifo" NBAFS - 100 mg/kg drug in experimental conditions for the purpose of correction of allocogenic diabetes mellitus, mainly did not cause drastic changes in the liver tissue, but continued in the form of development of dystrophic changes, and according to the above criteria in the evaluated case, " Shifo" NBAFS - 100 mg/kg drug is evaluated as having a high positive result compared to other groups in terms of high therapeutic efficiency and no side effects on liver tissue.

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