



MORPHOLOGY OF LIVER PARENCHYMA UNDER EXPERIMENTAL STARVATION

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Relevance. Starvation can be physiological (in hibernating animals) and pathological (in extreme conditions).

Pathological starvation is widespread and its complete (without food and water), incomplete (quantitative) and partial (qualitative) types are distinguished. In medicine, methods of prevention and treatment by starvation are also used.

In the world scientific literature there are scientific studies that studied the general morphology of the liver, the effect of cholestasis or fasting on the body. However, the scientific literature that studies comparative morphofunctional changes of the liver in cholestasis and fasting syndrome is insufficient. It has been proven in experiment that fasting is not one of the etiologic factors leading to liver fibrosis and cirrhosis. We set ourselves the task of morphologic elucidation of some aspects of these problems.

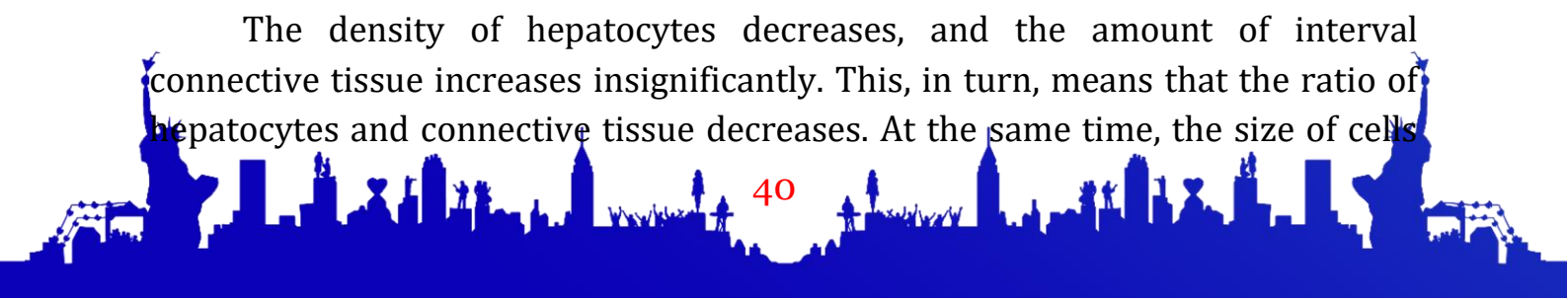
Aim and objectives of the study. The aim of the study is to investigate the morphology of the liver during experimental starvation.

Object and methods of research. Twenty-one healthy adult rabbits were taken as the object of study.

The liver material was fixed in 10% neutral formalin according to the method of Zabolotskikh (2000). Histologic sections were stained with hematoxylin-eosin and Van-Gizon method. The experiment was carried out by complete deprivation of food and water.

Results of the study. In short periods of experimental starvation (3 days) a slight thickening of the liver capsule of rabbits is observed (Fig. 1). A small amount of lymphocyte migration can be seen in the interstitial connective tissue. Interlobular blood vessels, bile ducts, hepatocyte size, and nucleus size decrease and their nuclear-cytoplasmic ratio decreases accordingly.

The density of hepatocytes decreases, and the amount of interval connective tissue increases insignificantly. This, in turn, means that the ratio of hepatocytes and connective tissue decreases. At the same time, the size of cells





decreases and spaces (vacuoles) appear in the cytoplasm. In a short period of time (3 days) of the experiment the cells are fed with stored nutrients, i.e. the process of autophagy is observed.

In the more distant period (10 days) of the experiment, the specified morphological and morphometric changes deepen. The reserve of cell nutrients ends and the organism switches to full internal (endogenous) nutrition, i.e. the process of protein breakdown in the liver, synthesis of glucose from amino acids and glycerol increases. Due to this, there are dystrophic changes in the structure of the liver, i.e. the size of blood vessels, bile ducts and liver cells decreases. However, life-threatening destructive changes (progressive fibrosis, sclerotic and necrotic) in liver structures were not observed.

Conclusion. Based on the data obtained in the experiment, it is morphologically substantiated that short-term fasting (3-10 days) is not a factor leading to fibrotic changes in the liver. Hence we can conclude that unloading day (1 day), daily fasting (1 month), short-term therapeutic fasting (1-10 days) do not cause life-threatening destructive irreversible changes in the organism.

