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CHANGES IN THE LIPID PROFILE OF FATTY LIVER DISEASE IN THE
EXPERIMENT

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Relevance. Fatty hepatosis, non-alcoholic fatty liver disease (NAFLD), is a disease characterized by the accumulation of fats in the liver (>5% of hepatocytes contain fat droplets) that is not caused by alcohol consumption or other known etiological causes (e.g., viral injury, drug-induced injury, Wilson's disease, etc.), but is associated with metabolic disorders.

The aim of the study is to evaluate changes in the lipid profile of fatty liver disease in an experiment.

Research materials and methods. The study included 16 sexually mature white laboratory rats. Using the distribution method according to the nature of the experimental effect, the animals were divided into four groups: **Group I — control group** — 1 animal, **Group II — fatty diet group** — 6 animals; to model fatty hepatosis, the animals received a diet with an increased content of fats and easily digestible carbohydrates during the specified experimental period, **Group III — group administered antibiotics** — 5 animals received a standard vivarium diet and antibiotics according to the developed experimental scheme, **Group IV — group of combined effect of antibiotics and a fatty diet** — 4 animals received a simultaneous diet with an increased fat content and antibiotics according to the established experimental scheme. At the end of the experimental period, blood samples were taken from the animals to determine biochemical and immunological indicators. The concentration of glucose, total cholesterol, lipoproteins of various fractions, triglycerides, and immunoglobulins of classes M, A, and G was determined. Statistical analysis of the results. Quantitative data were presented in the form of the mean and standard deviation in the normal distribution, and in the form of the median and interquartile interval in the non-normal distribution. The normality of the distribution was assessed using the Shapiro-Wilk test.

Research results. The glucose concentration in the control animal was 5.2 mmol/L. The highest average glucose value was observed in animals on a high-fat diet— **6.55 ± 0.83 mmol/L**. In four of the six animals in this group, the glucose concentration was 6.2-7.6 mmol/L, indicating the formation of carbohydrate metabolism disorders.

In the group with the combined effect of antibiotics and a high-fat diet, the glucose concentration was **5.63 ± 2.30 mmol/L**. A significant spread of the indicator from 2.2 to 7.0 mmol/L indicated a pronounced individual variability in the animals' metabolic response.

In the antibiotic group, the glucose concentration was lower, amounting to **4.86 ± 0.88 mmol/L**. The differences between the three experimental groups did not reach the accepted level of statistical significance - **$p = 0.109$** .



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The results obtained indicate that the increase in glucose levels is primarily associated with the use of a high-fat diet and may reflect the early formation of insulin resistance. However, to confirm this hypothesis, it is necessary to further determine the insulin concentration and calculate the HOMA-IR index. In the control animal, the amount of total cholesterol was 1.9 mmol/L, and triglycerides was 0.4 mmol/L.

Fat diet group, the total cholesterol concentration increased to **2.68 ± 0.96 mmol/L**, and the triglyceride content increased to **2.53 ± 1.59 mmol/L**. Thus, the average triglyceride level was approximately 6.3 times higher than that of the control animal.

