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Issue Article

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EFFECT OF RAT LIVER TISSUE (A AMYLASE) THE EFFECT OF HYPOKINESIS ON AMYLOLITICAL ACTIVITY

Abstract: *This paper provides information on the effect of hypokinesia on the amylolytic activity of liver tissue (a amylase) in mature rats. We can see that the amylolytic activity in the blood of mature rats (a amylase) is slightly higher than in young rats.*

Key words: *amylase amylolytic activity, liver tissue, enzyme, pancreas, homeostasis, hypokinesia, salivary glands, incretion.*

Language: *English*

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Introduction

Comparing the amylolytic activity in the blood and liver tissue (a amylase) of the control group of mature rats, the amylolytic activity in the blood of mature rats (a amylase) is 7-10 times higher than in young people, and in liver tissue, on the contrary, 1.5-2 times lower. This can of course be the result of the improvement of all its processes, including the enzyme secretion of the glands of the digestive system, when the organism is made. According to the well-known Rhotman S. and co-authors, the rate of enzyme protein synthesis in the pancreas is practically impossible, most of the enzyme excreted in the intestine is absorbed into the blood and from there the pancreas secretes it again, ie enteropancreatic circulation of enzymes is observed [1; 45-b.]. Confirming the same opinion and based on the results of many years of work [2; 982-994-p.] This process promotes the idea that it is specific not only to the pancreas, but to all digestive glands, and that there is recirculation of enzymes in the digestive system. This means that the digestive glands are integrated into a specific circulatory system by secreting glandulocytes from the blood and other glandular enzymes.

On day 1 (Fig. 1.1) of the effect of hypokinesia on the body of mature rats, a sharp decrease in amylolytic activity in the blood (a amylase) was observed, which means that hypokinesia initially inhibits incretion. Based on the above considerations, there are several reasons for the decrease in incretion,

including the permeability of the histogematic barrier and other factors. In addition, a decrease in the amount of enzymes in the blood can be caused by an increase in recretion.

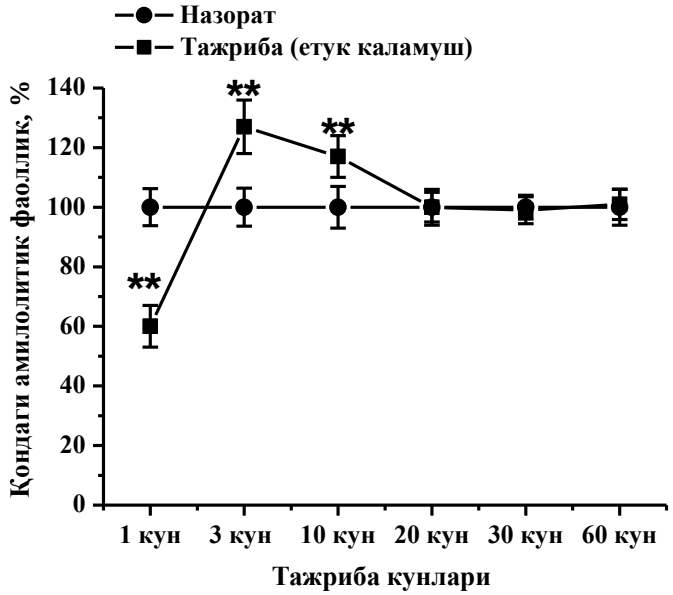

Figure 1.1. Effect of hypokinesia on amylolytic activity in the blood of mature rats (a amylase) ** P <0.01; n = 6.

In our experiment, a one-day exposure to hypokinesia in mature rats resulted in a 2-fold increase in amylolytic activity in liver tissue (α amylase) relative to control (Fig. 1.2) as a result of "deviation" of the amylase enzyme from the blood due to increased their recretion.

On days 3 and 10 of hypokinesia, the amylolytic activity in the blood of mature rats (a amylase) was reliably increased. Day 20 returned to baseline, i.e., control group level, and days 30 and 60 of the experiment remained the same.

Comparing the results obtained in young and mature rats with amylolytic enzymes (a amylase) (Fig. 1.1) shows that the process of adaptation to the stress factor in mature rats is faster, ie the synthesis of enzymes and their amount in the blood returns to normal under the influence of stress factor - hypokinesia. In young rats, the recovery process lasted until the 60th day of hypokinesia.

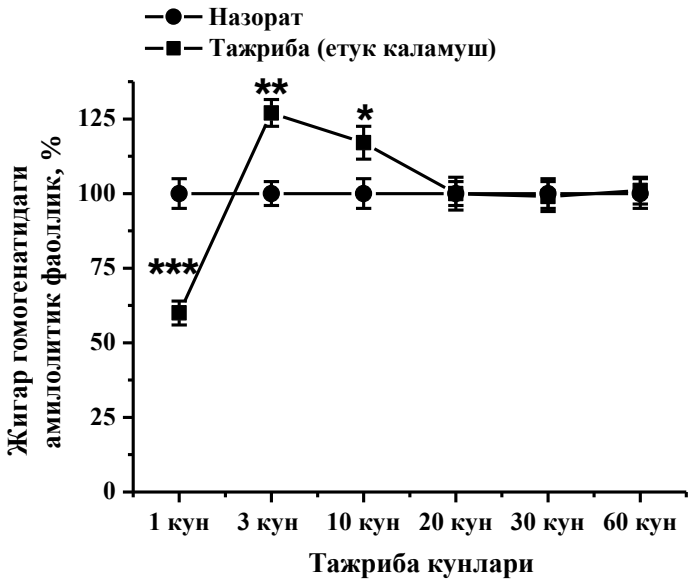

Figure 1.2. Effect of hypokinesia on amyolytic activity in liver homogenates of mature rats * P <0.05; P <0.01; * P <0.001; n = 6.

Changes in amylolytic activity in liver tissue (a amylase) under the influence of hypokinesia differ from the dynamics of this enzyme in the blood. On days 1, 3, 10, and 20 of hypokinesia, amylolytic activity in liver tissue (a amylase) increased and decreased on days 30 and 60, respectively.

The change in the amount of enzymes in a given organism is the result of adaptation to a given stressor factor. Adaptation, on the other hand, is the sum of the body's specific and nonspecific reactions. The body responds to any demand by altering its energy metabolism. Energy metabolism is directly related to the amount and activity of hydrolytic enzymes.

Changes in the activity of enzymes in the liver are mainly aimed at ensuring the stability of their amount in the blood. The control group confirms our view that the correlation correlation index of amylolytic activity in the blood and liver tissue of mature rats (a amylase) is positive and reliable. Under the influence of hypokinesia, a slight decrease in this correlation indicator, in some cases (20-day hypokinesia), can be understood as a reaction of the organism to this stressor, ie a decrease in rest to ensure enzyme homeostasis in the blood.

Effect of g-radiation on enzyme homeostasis in the blood and liver tissue enzyme activity in adult rats

Liver tissue cells are very sensitive to various endogenous and exogenous factors, the response to which occurs primarily through changes in enzymatic system activity in hepatocytes, which may be due to an increase in the concentration of peroxide oxidation products [3; 79-92-b; 85; 4–1-15-p.]. The following enzymatic changes were detected when rats of different ages were observed for 60 days after exposure to γ-radiation.

The combined effect of hypokinesia and γ-radiation on amylolytic activity in the blood and liver tissue of rats of different ages (a amylase)

The combined effect of both factors reduced the liver homogenate of young rats and the amylolytic activity in the blood (a amylase) from the first day of the experiment. Changes in amylolytic activity in the blood (a amylase) were observed to decrease day by day relative to control. Decreased amylolytic activity in hepatic homogenate (α amylase) In our next experiment, the combined effects of hypokinesia and γ-radiation on amylolytic activity in adult rat blood and liver homogenate (α amylase) were studied. The results were similar to those in young rats. However, in rats, different indicators emerged under the combined influence of two stressors. Under the influence of these factors, changes in amylolytic activity in rat blood and liver tissue homogenate (a amylase) were specific (Fig. 4.29, A and B).

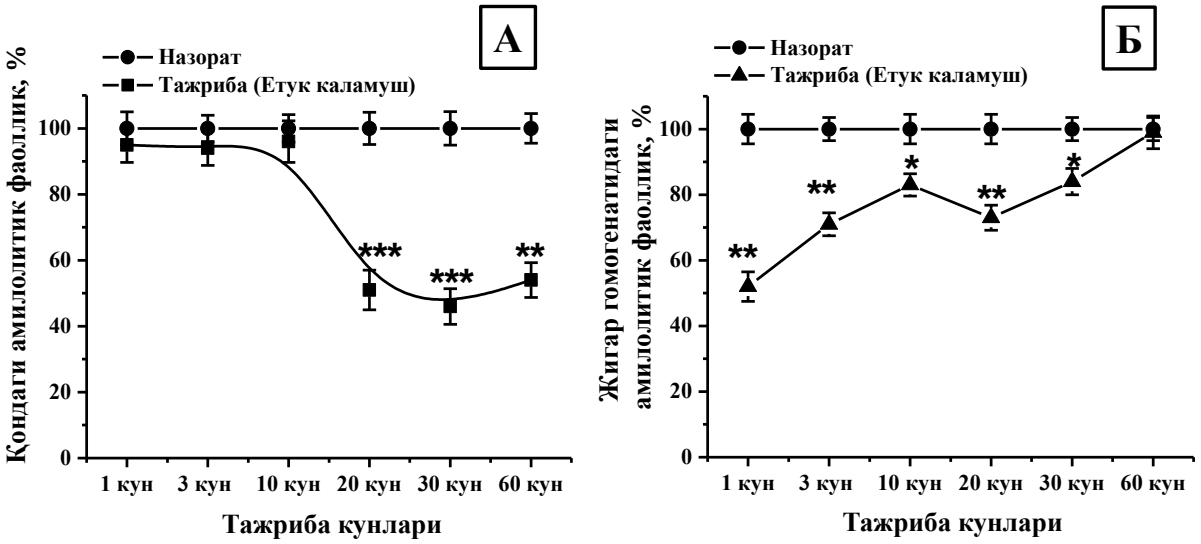

Figure 1.3. The combined effect of hypokinesia and γ-radiation on amylolytic activity in the blood of mature rats (A) and liver homogenate (B) (a amylase) * P <0.05; * P <0.01; * P <0.001; n = 6.

Changes in amylolytic activity in the blood (a amylase) decreased from day to day during the experiment relative to the control, and from 20 days to 60 days of the experiment, this figure remained twice as low as the control. As we know, amylolytic activity in the blood (a amylase) is provided mainly by enzymes encreted from the pancreas, salivary glands. The amylolytic activity in liver tissue (a amylase) decreased almost twice from control on the first day of the experiment, and during the experiment this activity was restored day by day and reached the control level at 60 days of the experiment (Fig. 1.3, A and B). This means that as a result of the combined action of two stressors, the synthesis and incorporation of this enzyme in the pancreas and salivary glands of mature rats is more severely disrupted.

Blood was sharper, decreased by almost 40% over 20 days of the experiment compared to the control, and gradually increased in the following days, but did not equal the control level even at 60 days of the experiment. In particular, this figure was 18% lower than in the control, at a lower level in the blood, at 60 days of the experiment. In liver homogenate, it was 7% less than in controls (Fig. 1.3, A and B).

Post-irradiation changes in amylolytic activity in the blood and liver homogenate (a amylase) of mature rats were different. This activity in the blood and liver homogenetics of irradiated mature rats decreased from the first day, especially when the amylolytic activity in the blood (a amylase) decreased sharply, almost twice (Fig. 1.4, A).

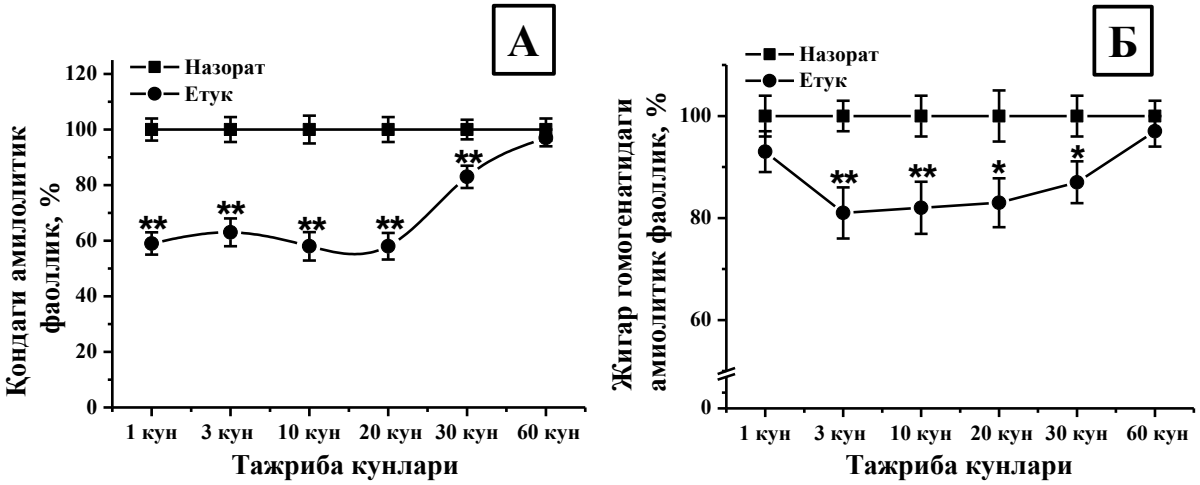

Figure 1.4. Effect of γ-irradiation on amylolytic activity in mature rat blood (A) liver homogenate (B) (a amylase), * P <0.05; ** P <0.01; n = 6.

This indicator in the blood had almost the same magnitude up to 20 days of the experiment, i.e., 58–63% compared to the control, 83% on the 30th day of the experiment, and 97% on the 60th day of the experiment, and remained significantly lower than the control group. The amylolytic activity in liver homogenate (a amylase) was consistently 7–19% lower than that of controls during the experiment, and even at 60 days of the experiment did not reach baseline, remaining below the control group (Fig. 1.4, B).

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