



## EFFECTS OF HEAVY METAL SALTS ON FOOD ASSIMILATION CAPACITY

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### ABSTRACT

*This article discusses the influence of internal and external environmental factors on human health and its formation. At the same time, there is a decrease in attention, memory and some features of the higher nervous system in school-age children due to the influence of factors of the internal and external environment, hypoxia in the early stages of ontogenesis*

**Introduction.** Health is the most basic wealth of mankind. Its formation is influenced by internal and external environmental factors. External and internal factors can have a negative or positive effect on the growth and development of the organism. The study of these opens up a wide range of protective work in maintaining the health of the organism [1].

External environmental factors also affect growing organisms. One of the main reasons for the loss of some features of attention, memory and higher nervous activity in school-age children is that they suffer from hypoxia in the early stages of ontogeny, congenital injuries and infectious diseases [2]. Various environmental factors, including hunger, high temperatures, and others, contribute to growth and developmental delays in the growing organism during lactation, as well as to the formation of nutrient assimilation mechanisms [3].

In the hot climate of the South Aral Sea, water consumption increases 8-10 times during the spring-summer and autumn periods. Recently, high levels of heavy metals and trace elements have been found in groundwater in the Republic of Karakalpakstan. Excess or deficiency of micronutrients in the body can lead to serious diseases. Heavy metals can also play a known role as a leading environmental factor determining the direction and development of agrobiocenoses. They can pollute the environment on a large scale and cause various toxicosis to humans, animals and plants [4].

**Object and methodology of research.** The experiments were performed on rat-born rats. This allows the lactation period of mammalian representatives to be short, making it easy to study the functions of the digestive process. For the experiments, rats with a body weight of 150–180 g were selected and 6–8 were kept in plastic cages measuring 50x30x28 cm, in a light room with air exchange. The room temperature was 20-26 °C and the relative

humidity was 40-60%. After the female rats adapted to the new conditions, three male rats were added to them for mating and separated again three days later. When the sign of pregnancy became apparent, each female rat was kept separately in a cage measuring 35x28x28 cm. The time of birth of rat babies was written in the cells. The body weight of newborn rats was measured and 8 children were left for each nursing mother. They were used as a control and experiment group at different stages of the experiment. It should be noted that the rat children were with their mother until the experiment.

To all the data obtained, G.B. However, [40] and Origin 6.1 were statistically processed in the U.S. program, and the arithmetic mean (M), mean error (m), and reliability index (R) were studied. An interval of  $R < 0.05$  was considered reliable.

**Research results.** The role of the external environmental factor in the implementation of the genetic program of growth and development of the organism is great. For example, alimentary factors - protein deficiency, malnutrition, chemicals used in agriculture in food, heavy metal salts, etc. - affect the mother's body through milk, leading to a decrease in offspring growth.

It is known that lead salt enters the gastrointestinal tract and also affects its composition and function. Decreased activity of enzymes under the influence of lead leads to insufficient digestion of nutrients, poor digestion of food. When the nutrients in the food that the body needs do not reach the cells, tissues, and other organs in the right amounts, diseases can occur in the body [5].

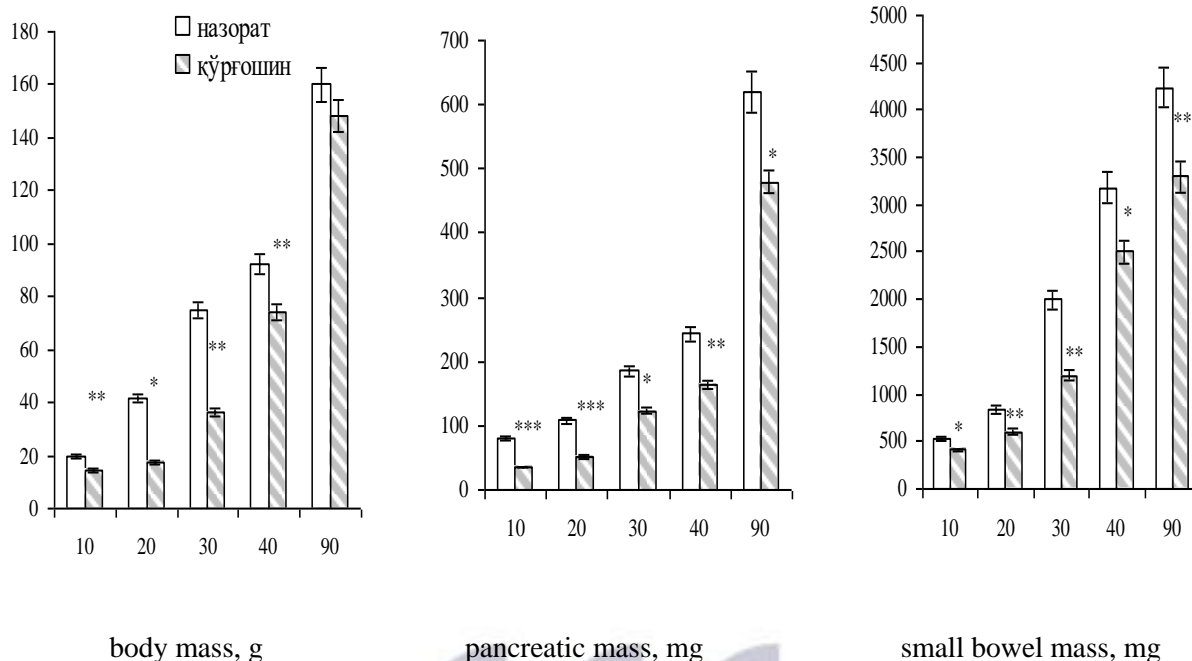
In experiments, changes in body mass, pancreas, and small intestine mass in her offspring were studied when lead nitrate salt was added to the diet of mother rats.

The body weight of the rats was  $19.8 \pm 1.5$  g in the 10-day control group. At the same time, body mass increased in 20-, 30-, 40-, and 90-day-old rats, and in 90-day-old rats, body mass was  $160.0 \pm 11.7$  g (Fig. 1).

In the experimental group, the body mass of 10-day-old rats was  $14.5 \pm 1.1$  g ( $P < 0.01$ ), while in 90-day-old rats, the figure was  $148.0 \pm 10.3$  g ( $P > 0.5$ ). It appears that the body mass of the rats in the 90-day experimental group was not significantly different from that of the control group animals.

The pancreatic mass of the rats increased from day 10 to day 90 in the control group and increased from  $79.7 \pm 6.3$  to  $620.0 \pm 49.6$  mg. In the experimental group, this process was found to be  $480.0 \pm 38.4$  mg ( $P < 0.001$ ) in 90-day rats when it was  $35.3 \pm 2.8$  mg ( $P < 0.001$ ) in 10-day-old rats.

When small bowel mass was measured in the control group, it was  $528.0 \pm 42.2$  mg in 10 days, and small bowel mass increased in the following days.



**Figure 1. Changes in body weight, pancreas, small intestine mass of rats under the influence of lead salt during lactation of postnatal ontogeny (M ± m, n = 8)**

Note: on the abscissa axis - the age of the animal, in days, on the ordinate axis - masses, g and mg, reliability index \* -R <0.05; \*\* - R <0.01; \*\*\* R <0.001.

In the experimental group, it was observed that the small bowel mass was lagging behind compared to the control group.

This means that when lead nitrate salt is added to the diet of mother rats, the body mass, pancreatic and small intestinal masses of their offspring lag behind the control group. This condition persisted until the 90th day of the rats. In general, as a result of the addition of lead, cadmium and arsenic salts to the diet of mother rats during lactation, the specific and general activity of pancreatic alpha-amylase, as well as enteral maltase and sucrose, which are involved in the digestive process in the cavity, decreased. At this time, the specific activity of the lactase enzyme increased when taking lead and cadmium salts.

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