# OF THE OFFSPRING BORN UNDER THE INFLUENCE OF CHRONIC STRESS FROM PREGNANT RATS THYMUS MORPHOLOGY IN DIFFERENT PERIODS

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**Annotation:**
The article studies the morphological and morphometric characteristics of the thymus organ of offspring born from pregnant rats under stress at 3 and 7 days of age and compares them with offspring from the control group. However, to date, there is no clear understanding of the mechanisms of this phenomenon and its biological significance.

**Key words:** Hassall corpuscles, thymus, stress, morphology, morphometry.

Depending on the speed and mechanism of activation, a) urgent or immediate (sympathoadrenal) stress, which occurs instantly (within a few seconds) and is aimed at a quick exit from a dangerous situation; b) prolonged (glucocorticoid) stress or general adaptation syndrome, which develops later (within a few hours) and is aimed at long-term resistance to the stressor; the mechanism is based on the stimulation of pituitary hormones and adrenocorticoids [1,2]. Cortisol is a glucocorticoid produced by the adrenal glands and is considered a "stress hormone" because it is actively produced in response to stress.

**The purpose of the study**. Methods of study in different periods of thymus morphology of offspring born under the influence of chronic stress from pregnant rats.

**Research materials and methods.** To achieve this goal, 70 white laboratory rats weighing 160-180 grams were used. White laboratory rats were divided into 2 groups. Group 1 consists of 20 healthy rats as a control group. Pregnant rats of the control group are injected with 1.0 ml of saline solution into the stomach every

morning. A subclavian catheter is used as a probe. The second group is experimental, and 50 pregnant white laboratory rats were kept in specially prepared labyrinth cages to create experimental stress. Several methods are used to achieve the result: general histological method, organometric, morphometric.

**Results of the study:** The following changes were determined by the organometric method: The average weight of rats in the control group, that is, not born under the influence of stress, was 7.2 ± 1.6 grams on the 3rd day and 14.6 ± 3.1 grams on the 7th day. The weight of rats in the experimental group, i.e. those born under the influence of stress, was 5.6±1.3 grams after 3 days and 8.2±1.8 grams after 7 days. This shows that the weight of the offspring born under the influence of the stress factor was 1.5±1.2 times less than that of the offspring in the control group. 10 rats in the experimental group, i.e. 20 percent of the rats were born dead due to the strong cold factor.

Control group on days 3 and 7: The thymus of the rats in the control group is surrounded on the outside by a connective tissue capsule consisting of numerous cellular elements with round and ovalelongated nuclei of pale color, with a clearly defined carelememma and a clearly distinguishable chromatin pattern, as well as thin wavy-like fibers oriented along the surface of the organ. In some places, the capsule contains lymphoid cells, apparently penetrating here from the parenchyma of the thymus. The septa extend from the capsule and penetrate deep into the organ. However, they do not completely divide the thymus tissue into compartments, as a result of which the thymus tissue is located in a continuous state in the central part of each of them. The septa include thin-walled blood vessels filled with shaped blood elements and lined with smooth endothelium, the cells of which contain faintly colored elongated nuclei and are oriented along the border of the vascular plate.

They look like microcysts, the lumen of which is filled with a structureless mass or empty, but the outer layer consists of concentrically arranged epithelial cells with elongated nuclei. This layer looks like a capsule. The diameter of the corpuscles ranges from 8.36 to 21.74 microns. In all areas of the thymus, between the lymphoid cells, reticuloepithelial cells containing round and oval-elongated nuclei with clearly distinguishable karyolemma and nucleoli are found. In the medulla oblongata,

reticuloepithelial cells are more visible than in the cortex, due to the looser arrangement of lymphocytes; in this layer they quite often come into contact with each other and form small clusters. It should be noted that in the thymus of the rats of the control group that we studied, large oval cells (13.6±0.2 microns in diameter) with eosinophilic cytoplasm and densely colored centrally located nuclei were found. They resemble plasma cells and are always localized singly in the medulla oblongata and cortex, as well as in the connective tissue capsule and septa.

**Conclusion**

1. The research results showed that organometric and morphological changes in the thymus in offspring born under stress at the ages of 3 and 7 days were slightly more destructive than in control rats.
2. In particular, in experimental rats aged 3 and 7 days, compared with control rats, it can be seen that the karyolimma in the thymus medulla was deeply damaged, the number of T- lymphocytes was sharply reduced, and profound dysfunction was observed.

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