

FEATURES OF THYROID REGULATION OF PHYSIOLOGICAL FUNCTIONS WITHIN EUTHYROID ZONE

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The mechanisms of thyroid regulation of physiological functions are the subject of numerous studies. However, the question of the nature and regularities of thyroid regulation of functions within the euthyroid hormone zone remains insufficiently studied (within the range of concentrations of circulating iodothyronines of the euthyroid (intact)

organism). The determination of the form of the dependence of the degree of functional activity of free triiodothyronine on its concentration within the range of the euthyroid zone was the aim of this paper.

During the experiments, the state of four physiological parameters of the animals was studied: at in vivo conditions - the rate of oxygen consumption and heart rate, in situ - the power developed by the muscle during external work, and the latent period of the M-response generation by the muscle fiber of the *m. tibialis anterior*. After completion of the experiment, the animal was decapitated, and the content of free triiodothyronine (T3) was determined in the blood sample. The hormone was determined by the enzyme immunoassay using the «Thermo Labsystems» system (Finland) and the standard set of reagents «Thyroid IFA-triiodothyronine free» from Russia.

The comparative analysis of the individual parameter importance in pairs "the value of the physiological parameter – level of circulating free triiodothyronine" allowed to establish a form of dependence of the hormone functional activity from its concentration at within of the euthyroid zone at white rats. The uneven character of the physiological activity triiodothyronine in various sectors of the scale of its concentration was established. It has been shown that at increasing of the triiodothyronine level within the euthyroid zone its the functional activity of relation on physiological parameters (heart rate, muscle power and latent period of M-response) increases according to the law «polyline» with a point of inflection in the 3.8 – 4,1 pmol / L. The point of inflection cuts off about 30 % of the initial sector of euthyroid scale triiodothyronine concentration and serves as a conditional boundary between the low level («2.2 – 3.8 pmol / L») and the high level («3.9 – 7.6 pmol / L») of the hormone activity. Such regularity in the relation of the oxygen consumption rate by the animals is not marked. In this case, with increasing of the triiodothyronine concentration the oxygen consumption rate in the whole researched range is increasing accordance with the law of a straight line.

Keywords: thyroid regulation of physiological functions, triiodothyronine, muscle contraction, heart, general metabolism.

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