

ASSESSMENT OF NATURE OF INFLUENCE OF THE LONG ENTERED
ARGININE ON FUNCTIONAL CONDITION OF SKELETAL MUSCLE OF
WHITE RATS

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Research objective consisted in the studying of the effects of long entered (from 10 to 60 days) arginine (Arg) in the pharmacological dose (100 mg/kg) on the functional status of a skeletal muscle of the mixed type with prevalence of the fast fibers (*m. tibial anterior*).

Method. Experiments performed on sexually mature rats-females (190–210 g) originally divided into 2 groups: control (n=10, C-group) and experimental (n=30), which being exposed to daily administration of an arginine (Kardioarginine, "Zdorov'e", Ukraine) in a dose, adequate therapeutic for the human – 100 mg/kg, throughout 10 (10Arg-group, n=10), 30 (30Arg-group, n=10) and 60 (60Arg-group, n=10) days. On the anesthetized animals (sodium thiopental, 100 mg/kg) with the use of electromyography and myography the some parameters of the functional condition of the forward tibial muscle was studied. The muscle's contraction was induced by the irritation of the fibular nerve by superthreshold electric current.

Results. It is determined that already after the first 10 days of Arg-administration the positive changes in the functional status of the researched muscle are watched: the increase in comparison with control of the capacity of titanic contraction (for 48 %), lengthening of the periods of its maximum (for 38 %) and submaximum (for 39%) workability. Moreover, the muscle of the animals of 10Arg-group was characterized by the increased resistance to exhaustion in a favor of what the absence of the decreasing of the amplitude of M-responses and the increase in their duration and also the absence of the decreasing of the amplitude of single contractions and quantity of the activated motive units of the muscle after execution of the tiring work typical for control animals testifies. After 30–60 days of Arg-administration along with the positive changes taking place at the animals of 10Arg-group, the increase in the comparison with control of the muscle's mass (for 13–29 %), the initial amplitude of M-responses (for 54–59 %) and single contractions (for 25–29 %) against the background of truncation of the latent period of single contractions (for 16–18 %), increase in external muscle work in case of titanic contraction (for 32–31 %), essential increase in its capacity (for 134–133 %) and durations of the periods of maximum (for 85–100 %) and submaximum (for 72–76 %) workability is marked besides. All these facts specify in a favor of the increase in a level of synchronization of the excitement and contraction in the muscle, improving of its force characteristics, workability and the resistance to exhaustion under the Arg-influence.

Conclusion. The data received in the model experiments on the animals in the conditions of in situ confirm the ability of the Arg in a dose, adequate therapeutic for the human (100 mg/kg), to improve the functional parameters of the skeletal muscle.

Keywords: skeletal muscle; arginine.

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