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# BOOK OF ABSTRACTS

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**MORPHOMETRIC ANALYSIS OF THE LEFT VENTRICLE  
MYOCARDIUM AFTER ADMINISTRATION OF NANDROLONE  
DECANOATE IN EXERCISE RATS**

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Anabolic androgenic steroids (AASs) are synthetic analogs of testosterone. Because of its anabolic effect, in recent decades, AAS became very popular among professional and recreational sports man. The aim of this study was to examine the chronic effects of exercise training alone or combined with supraphysiological doses of nandrolone decanoate (ND) on cardiac muscle of the left ventricle. The study included 32 Wistar albino male rats, divided into 4 groups: control (T-N-), nandrolone (T-N+), exercise training (T+N-) and exercise training plus nandrolone (T+N+) groups. The T+N- and T+N+ group swam for 3 weeks, 1 hour/day, 5 days/week. The T-N+ and T+N+ groups received nandrolone decanoate (20 mg/kg b.w.) once *per* week, subcutaneously. After 3 weeks of training, the rats were sacrificed. Heart biopsy specimens were routinely fixed and embedded in paraffin. Five micrometer thick sections were stained with hematoxylin and eosin (H/E). Captured microscopic images were processed by special software for image analysis to quantify results. Our result show that nandrolone alone causes left ventricular wall thickening for 4% ( $p > 0.05$ ), training alone 14% ( $p > 0.05$ ) while training combined with nandrolone leads to increased wall thickening for 24% ( $p < 0.05$ ). Longitudinal section diameter of cardiac muscle cells was increased for 6% ( $p > 0.05$ ), in T-N+ for 23% ( $p < 0.05$ ), in T+N- and for 33% ( $p < 0.05$ ) in T+N+ group. Comparison between the experimental groups showed that the largest difference of longitudinal section diameter can be observed between T-N+ and T+N+ (24%;  $p < 0.05$ ) and the lowest difference was found between T+N- and T+N+ (8%;  $p > 0.05$ ). Cross section muscle cell area was increased in T-N+ for 7% ( $p > 0.05$ ), in T+N- for 29% ( $p < 0.05$ ), in T+N+ for 31% ( $p < 0.05$ ). Comparison between the experimental groups showed that the difference of cross section area between T-N+ and T+N+ was 22% ( $p < 0.05$ ) and the lowest, non-significant difference was found between T+N- and T+N+ (1.6%;  $p > 0.05$ ). Chronic administration of supraphysiological doses of ND alone promote mild cardiac muscle hypertrophy, but only in combination with the exercise training the degree of the cardiac muscle hypertrophy of the left ventricle is significant.

**Key words:** nandrolone, cardiac muscle, training, morphometry, rat

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