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Relationship between Nitric Oxide and Vegf on the skeletal muscle of aerobic trained rats

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**RELATIONSHIP BETWEEN NITRIC OXIDE
AND VEGF ON THE SKELETAL MUSCLE
OF AEROBIC TRAINED RATS**

BACKGROUND

It is known that aerobic training can modulate skeletal muscle fibers. Moreover, recent studies show that nitric oxide, as well as VEGF may play an important role in these events. However, the underlying mechanisms to muscle modulation by exercise are still controversial.

PURPOSE

The aim of this study was to investigate the relationship between NO and VEGF in aerobic trained rats.

METHODS

An exercise animal model was used. All the animals' experiments and treatments were in agreement with the national and international guidelines regarding the experimental use of animals. Eighteen male Wistar rats (~250 g) performed an aerobic training for 8 weeks in a treadmill. At the end of the training period the training efficiency was assessed by a resistance/velocity test. After training, blood and muscles were collected. Serum VEGF was analyzed by a commercial kit (ELISA) and NOS expression by western blot. Histological analysis for fibers quantification and muscle integrity of the soleus muscle was performed (HE and ATPase staining).

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RESULTS

The aerobic training increased the number of type I muscle fibers and reduced the type II number. These changes were associated with an increase in iNOS and, principally, cNOS expression. Concerning VEGF serum concentrations, a significant increase in the trained

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group was verified, which was also positively correlated with an increase in the capillary/fiber ratio.

CONCLUSION

Our results showed an increase in the type I fiber type induced by aerobic exercise. They also suggest that iNOS and, principally, cNOS and VEGF are implicated in fiber type change induced by aerobic exercise.