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Hits for promoting coronary endothelial angiogenic phenotype in normal rats

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Introduction: The VEGF induced angoiogenic phenotype of coronary endothelial cells is a key component for restoration of failing heart. However, there is no rectification of the factors that promote it.

Objectives: To study effects of intermittent ischemia (I), telmisartan(T) and atorvastatin (A) alone and their combination on VEGF induced angiogenic responsiveness in coronary endothelial cells (VEGF-ang-res-cEC).

Methods: Male wistar rats were divided into four groups, normal rats, T treated; A treated; and combination of T+A treated normal rats.Each group was further divided into two subgroups; sham heart and Iheart. Coronary endothelial cells (cEC) were isolated from each subgroup for study of ang-res-cEC and NO bioactivity.

Results: I, T and A treated groups significantly increased VEGF-ang-res-cECas compared to their respective normal rats. The combination of any two of them and all showed significant increase in VEGF-ang-res-cEC as compared to alone treated groups. The effects of I, T,A, I+T, I+A, T+A and I+T+A were significantly inhibited by pre-treatment of cECs with eNOS inhibitor, NG-nitro-l-arginine methylester (l-NAME) and PI3K inhibitor, wortmannin whereas PKC inhibitor, chelerythrine, attenuated effects of all except T and T+A.

Conclusion: Our data suggest that intermittent ischemia, telmisartan, atorvastatin, and their combination promotes the coronary angiogenic activity in normal rats via stimulating VEGF/PI3K+PKC/eNOS/NO pathway, and the order of improvement is I>T>A.

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Gender peculiarities of autonomic regulation of heart rate adaptation to highlands in elite athletes

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Adaptation to mountain conditions is a complex and multifaceted process that involves different functional system. One of the most important components of adaptation to mountain conditions is the regulation of physiological functions. Thus, the study of gender-specific adaptation of autonomic regulation of heart rate to mountain conditions is a key issue.

34 elite athletes (17 women and 17 men, aged 20-26), members of the National team of Ukraine Judo was examined. Studies were conducted on training camp in mountainous base "Zaroslyak" in Carpathians. The autonomic regulation of heart rate was studied by cardiac monitor «Polar-RS800CX». The parameters: duration, frequency and fluctuations of cardio interval were studied.

The results suggest gender differences in the dynamics of the state of the autonomic nervous system in elite judokas. In men in response to training load in the mountains changing the ratio sympathetic and parasympathetic tone by activation of the pituitary-adrenal and sympathoadrenal system. In women, the ratio of sympathetic and parasympathetic tone remains unchanged. Critical to the process of adaptation to highlands in elite athletes, according to heart rate variability, is the fourth and eighth day stay in the mountains

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