



**Effect of vitamin C administration on hematological adaptations produced by living at high altitude in combination with sea level sprint training**

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**INTRODUCTION:** Living at high altitude in combination with sea level training stimulates erythropoiesis with a resulting increase in red blood cells. It is well known that hypoxic exposure increase the production of reactive oxygen species generating oxidative damage. Vitamin C is an important antioxidant in human plasma and generates a protective effect on oxidative stress in animals submitted to hypoxic protocols. The aim of the study was to determine whether the administration of vitamin C modulates the hematological adaptations induced by an hypoxic protocol (12h pO<sub>2</sub> 12% /12h pO<sub>2</sub> 21%) combined with sprint interval training in a 21 days experimental period.

**MATERIAL AND METHODS:** Eight treatments groups of randomly allocated male wistar rats were compared: normoxia rest+ vitamin C (n=5), normoxia trained+vitamin C (n=5), normoxia rest+water (n=5), normoxia trained+water (n=6), hypoxia rest+vitamin C (n=5), hypoxia trained+vitamin C (n=5), hypoxia rest+water (n=5), and hypoxia traied+water (n=5).

**RESULTS:** We have found lower levels of hemoglobin and hematocrit at the middle part of the experimental period of 21 days in the hypoxic with interval sprint training plus vitamin C group when it was compared with the other hypoxic groups. No effects were found on red blood cells count, reticulocytes, and mean corpuscular hemoglobin. We report a slight change in the mean corpuscular volume.

**CONCLUSIONS:** The interaction of hypoxia, sprint training and vitamin C supplementation has an important effect on hematological adaptations. These results suggest that administration of antioxidant vitamins, under hypoxic protocols, should be revised.

**Palabras clave (máximo 3):** Hypoxia, red blood cells, antioxidant vitamins