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Title: Skeletal muscle metabolic enzymes are altered by hyperbaric oxygenation treatments.

Authors: Nelson, AG
Wolf Jr, EG
Bradshaw, PO
Hearon, CM
Li, B

Keywords: HBO
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rabbit
animal

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Abstract: To test whether repeated HBO exposures would increase activity of skeletal muscle metabolic enzymes, 27 rabbits (3 groups) were exposed 90 min/day, 5 days/wk to either 100% O₂ at 243 kPa (HBO), 100% O₂ at 101 kPa (HIO), or 21% O₂ at 101 kPa (CON). Four animals per group were killed after 2 wk treatment, and the remaining five per group were killed after 8 wk of treatment. Soleus, plantaris, and tibialis anterior muscles were removed, and the activities of adenylate kinase, alpha-glycerophosphate dehydrogenase, and citrate synthase were measured. After 8 wk there was no difference in enzyme activity between groups for either plantaris or tibialis anterior. In the soleus after 8 wk there was no difference between groups in adenylate kinase activity, but alpha-glycerophosphate dehydrogenase activity was 56% greater ($P < 0.05$) in HBO than in HIO and 50% greater than in CON, and citrate synthase activity in HBO was 24% greater ($P < 0.05$) than that in HIO and 36% greater than that in CON. Inasmuch as the soleus is a postural muscle, these results suggest that long-term HBO treatments can increase enzyme activity in an actively contracting muscle.

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