1-B-10 Effect of acute high-intensity intermittent exercise on MCT1 and MCT4 expression in rat epitrochlearis

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Purpose: Monocarboxylate transporter (MCT) plays a key role in regulating the uptake and efflux of lactate. The present study examined whether a single bout of high-intensity intermittent exercise (HIE) acutely increases expression of MCT1 and MCT4 protein in skeletal muscle.

Methods: Male SD rats aged 4 weeks underwent fifteen 20-second bouts of swimming carrying a weight equal to 18% of their body weight, with a 20-second rest between bouts. Epitrochlearis and triceps muscles were dissected with time course from immediate time point to 24 h post-HIE exercise and were compared MCT1 and MCT4 expression with non-exercise group.

Results: HIE drastically decreased muscle glycogen and increased blood and muscle lactate, and significantly increased phosphorylation of AMP-activated protein kinase in immediate post-HIE exercise. MCT4 protein significantly increased at 18h post-HIE exercise, but not the MCT1 protein.

Discussion: HIE can acutely increase expression of MCT4 protein through transcriptional mechanism.

Key Words: lactate, high-intensity exercise, MCT

1-B-11 The effect of vitamin C supplementation on endurance training-induced adaptation in rat skeletal muscle

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Purpose: The purpose of this study was to determine whether vitamin C supplementation prevents the increase of endurance training-induced mitochondrial biogenesis of the skeletal muscle.

Methods: Male Sprague-Dawley rats were assigned to one of four groups: sedentary control group, trained control group, sedentary vitamin C supplemented group and trained vitamin C supplemented group. The rats of the training group swam for 6 hour in two 3 hour sessions divided by 45 min of rest. The training was performed 10 days in a row. The rats of the vitamin C supplemented group were fed vitamin C (500mg/kg weight/day) from 15days before the beginning of training period to the end of training period.

Results: Endurance exercise training significantly increased citrate synthase (CS) and hexokinase (HK) activities. However, vitamin C supplementation did not alter training-induced elevation of these enzyme activities.

Conclusion: Endurance training increases the mitochondrial biogenesis of the skeletal muscle. However, vitamin C supplementation does not alter the skeletal muscle adaptation to endurance training.

Key Words: reactive oxygen spices (ROS), antioxidant, muscle adaptation