

IRANIAN JOURNAL of IMMUNOLOGY

Volume 11, Supplement 1, April-May 2014 ISSN 1735-1383

ABSTRACT BOOK

12th INTERNATIONAL CONGRESS
OF IMMUNOLOGY AND ALLERGY

TEHRAN

APRIL 29th to May 2nd 2014

www.iji.ir

effects (as indicated by the IL-10/TNF- α ratio) compared to NRT.

Keywords: Exercise training, IL-10/TNF- α ratio, Inflammation, Interleukin, Obesity

30310

Endurance exercise training alters the HSP70, IL-6 and IL-1 β responses in rat skeletal muscle to downhill running

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Background: Heat shock protein 70 (HSP70) seems involved in both adaptations to training and the muscular response to exercise-induced muscle injury. In this study we tested the hypothesis that muscular HSP70 levels are increased by endurance training and that this would alter the HSP70 and cytokine responses to downhill running (eccentric exercise) in rats.

Methods: 12Wistar rats were randomly allocated to 8 weeks of treadmill endurance training (0° slope). Five of the trained and five sedentary rats were exposed to downhill running (-16°, 90 min). M. soleus was harvested 24 hours after the training period and 24 hours after the downhill running. All muscles were analysed for HSP70 mRNA and protein levels, and IL-6, IL-1 β , and TNF- α . Serum was analysed for creatine kinase (CK). **Results:** The training period induced augmented intramuscular levels of HSP70 and IL-6, compared with sedentary control animals. HSP70 protein levels increased only in the sedentary rats after downhill running. Downhill running induced increased IL-6 levels in both trained and sedentary rats, while IL-1 β increased only in trained rats. TNF- α levels were unaffected by both training and downhill running. **Conclusion:** Endurance training elevated the HSP70 levels in m. soleus, which might have preconditioned the muscles for the downhill running, as evaluated by CK and the HSP70 responses. Since IL-6 and IL-1 β increased in trained rats only, and that these cytokines appeared to be separately regulated from the pro-inflammatory cytokine TNF- α , suggest that IL-6 and IL-1 β are involved in the recovery and/or adaptation processes in the skeletal muscles after exercise.

Keywords: Eccentric exercise, Preconditioning, Heat shock proteins, Cytokines