IJAE
Vol. 122, n. 1 (Supplement): 14, 2017
ITALIAN JOURNAL OF ANATOMY AND EMBRYOLOGY

# An animal and cellular study on αB-crystallin activation in cardiac muscle by acute exercise

Ambra Antonioni, Ivan Dimauro[1], Neri Mercatelli[1], Rosario Barone[2], Filippo Macaluso[2], Valentina Di Felice[2], Daniela Caporossi[1]

[1] Department of Movement, Human and Health Sciences, University of Rome "Foro Italico", Italy
[2] Department of Biomedicine and Clinical Neurosciences, University of Palermo, Italy

Alpha-B-Crystallin (CRYAB), a Small Heat Shock Protein sensitive to oxidative stress, is expressed in many tissues and implicated in various biological processes. In cardiac muscle, CRYAB exerts a cardio protective role in ischemia-induced damage preventing apoptosis and necrosis.

In the present study we used forty young (7-weeks old) healthy male mice (BALB/c AnNHsd), which after 1 week of acclimatization to the new housing environment, runned 2 days per 10 minutes. The TR mice ran for 60 min at a speed of 5.5 m/min. Mice were sacrificed immediately after, 15 and 120 minutes after the end of the acute bout of endurance exercise (TR-0', TR-15' and TR-120', respectively). We prepared samples from the heart and from the group of posterior muscles study αB-crystallin' response at different time of recovery from an acute aerobic exercise (1 hour), correlating its modulation with oxidative stress level.

We found that a single bout exercise lead to a specific short-term increase of phospho-αB-crystallin level (pCRYAB), without changes of its total expression. Further, the level of 4-hydroxynonenal, a marker of lipidic peroxidation, has shown a similar trend of pCRYAB enhancement. This may indicate that CRYAB in cardiac muscle is activated and it has a putative role in oxidative stress during exercise. These results are supported by our previous data obtained in mouse skeletal tissues (i.e. gastrocnemius, soleus) and in $H_2O_2$-treated C2C12 myotubes. In particular we observed not only a fiber-dependent response of pCRYAB, but also its translocation into myofibrillar compartment.

Experiments are in progress to further investigate on CRYAB role during exercise and its interactions with cytoskeletal structures.