

Effects of Therapeutic Cold Against the Oxidative Damage Following a Skeletal Muscle Contusion in Rats

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The skeletal muscle contusions are among the most common damages seen in sports medicine. Although the ideal treatment for these injuries remains uncertain the use of physical agents as well as the therapeutic cold is a common choice of the clinicians. However, only limited data are available in the literature about the biochemical phenomena that underlie the therapeutic effects of cold. Thus, in the present study we examined the possible central role oxidative stress related to a skeletal muscle contusion induced in rats, and the capacity of the therapeutic cold to modulate this oxidative damage. The biochemical analyses were performed using *Wistar* rats immediately after the skeletal muscle contusion and after one day of treatment in the site of the lesion (skeletal muscle tissue) and also peripherally (blood tissue). According to our results we observed that the skeletal muscle contusion induced a significant increase in the plasma creatine kinase activity (CK), in the oxidized dichlorofluorosceine (DCFA) levels, and in thiobarbituric acid reactive substances (TBARS) levels, both in the site of the lesion and peripherally. Furthermore, we observed a significant decrease in the lactate dehydrogenase activity (LDH), in the total thiols levels (-SH) and in methyltetrazolium (MTT) reduction levels in the site of the lesion due to the skeletal muscle contusion. In summary, our results suggest that the skeletal muscle contusion was associated with a significant increase in the oxidative damage, and that the therapeutic cold was able to act as a powerful antioxidant agent.

Key Words: Skeletal muscle, contusion, therapeutic cold, antioxidant

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