Cryotherapy reduces the oxidative damage determined by a skeletal muscle contusion in rats

Leal, C.Q¹; Bianchini, M.C.¹; Salgueiro, A.C.F¹; Puntel,G.O.¹; Puntel, R.L¹; Folmer, V.¹; Soares, FA.A ².

¹ Universidade Federal do Pampa, RS, Brasil
² Universidade Federal de Santa Maria, RS, Brasil – Departamento de Química

The skeletal muscle contusions are one of the most common musculoskeletal disorders and impair the people normal daily activities. One of the most efficient and ease kind to treat such lesions is the cryotherapy, however, the more efficient mode to its use remains unclear. The aim of this study was to investigate the effects of brief and repeated cryotherapy applications on the oxidative damage depicted by a skeletal muscle contusion in rats. Adult male wistar rats were divided in control, lesion, and cryotherapy groups. The contusion was produced by a mass of 150 g that fell from a height of 100 cm over an impactor placed in the midbelly of the muscle. The cryotherapy was developed during 5 minutes each section immediately and also 2, 4, 6 and/or 12 hours after the contusion. We observed a significant increase in the thiobarbituric acid reactive substances (TBA-RS) levels and in the catalase (CAT) enzyme activity only in the initial hours, while the myeloperoxidase (MPO) enzyme activity was increased only in the final hours after the contusion. The superoxide dismutase (SOD) enzyme activity was increased during all the analyzed period as well as the decrease observed in the ascorbic acid and in the non protein thiol groups (-SH). On the other hand, the cryotherapy modulated the changes induced by contusion. In fact, that the oxidative damage was related with the time following the contusion, and the cryotherapy diminished the oxidative damage intensity as well as accelerated the recovery of the muscular tissue.

Word Keys: contusion, cryotherapy, oxidative stress;
Supported by: CAPES, FAPERGS;