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Effect of low-level laser therapy (GaAs 904 nm) in skeletal muscle fatigue and biochemical markers of muscle damage in rats.

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Source

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Abstract

We wanted to test if pre-exercise muscle irradiation with 904 nm laser affects the development of fatigue, blood lactate levels and creatine kinase (CK) activity in a rat model with tetanic contractions. Thirty male Wistar rats were divided into five groups receiving either one of four different laser doses (0.1, 0.3, 1.0 and 3.0 J) or a no-treatment control group. Laser irradiation was performed immediately before the first contraction for treated groups. Electrical stimulation was used to induce six tetanic tibial anterior muscle contractions with 10 min intervals between them. Contractions were stopped when the muscle force fell to 50% of the peak value for each contraction; blood samples were taken before the first and immediately after the sixth contraction. The relative peak forces for the sixth contraction were significantly better ($P < 0.05$) in the two laser groups irradiated with highest doses [151.27% (SD +/- 18.82) for 1.0 J, 144.84% (SD +/- 34.47) for 3.0 J and 82.25% (SD +/- 11.69) for the control group]. Similar significant ($P < 0.05$) increases in mean performed work during the sixth contraction for the 1.0 and 3.0 J groups were also observed. Blood lactate levels were significantly lower ($P < 0.05$) than the control group in all irradiated groups. All irradiated groups except the 3.0 J group had significantly lower post-exercise CK activity than the control group. We conclude that pre-exercise irradiation with a laser dose of 1.0 J and 904 nm wavelength significantly delays muscle fatigue and decreases post-exercise blood lactate and CK in this rat model.

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