**Vascular photobiomodulation on total hematological leukocytes after muscle injury in an animal model**

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**Abstract:**

The local irradiation method of photobiomodulation (PBM)demonstrated positive effects in the literature when applied in an acute skeletal muscle injury stimulating the repair, with reduction of the local inflammatory infiltrate and modulation of cytokines and growth factors involved in the regenerative process. Evidence suggests that the non-invasive and transcutaneous vascular photobiomodulation (VPBM), a modified form of ILIB (Intravascular or Intravenous Laser Irradiation of Blood) irradiation, has systemic effects, with an improvement of the immune system, of a wound healing model and on the reduction of muscle injury biochemical markers. The aim of the present study was to analyze the effects of preventive or therapeutic transcutaneous VPBM on peripherical blood leukocyte count after the inducement of an acute skeletal muscle injury in rats. Wistar rats (n = 85) were divided into five experimental groups: Control; Injury; non-injured + VPBM; Previous VPBM + Injury; Injury + VPBM after. The animals' tail vein was transcutaneously irradiated using a low-level AlGaAs diode laser (780 nm, 40 mW, 0.04 cm2, 3.2 J, 80 s) and the procedure was performed in different periods, prior to or after the injury induction. Blood samples were collected at 1, 2, 5and 7 days following the cryoinjury procedure and submitted to an automatic hematology analyzer to obtain the absolute total leukocyte count. On days 1 and 7 Non-injured + VPBM group showed a decrease in leukocytes compared with the Control group. The previous VPBM group showed an increase in absolute leukocyte count on days 1, 2 and 5 in comparison with the Injury + VPBM after group. No differences were found on day 7. In conclusion, VPBM was able to increase the number of total leukocytes at 1, 2 and 5 days and the effect was more pronounced in the previous VPBM group.

**Biography**

Veronica Ovidio Carvalho de Santana was graduated in Biological Sciences at Universidade Nove de Julho (2018), Postgraduate in Teaching in Biotechnology at Universidade Franciscana (2022). Currently she is a Master’s Degree student in Biophotonics Applied to the Health Sciences.