Photobiomodulation therapy reduces levels of MMPs and TNF-α, controlling tissue degradation, promoting maintenance of cartilage resistance, in an experimental model of Rheumatoid Arthritis.

Abstract:

Reumatoid Arthritis (RA) is a chronic inflammatory, autoimmune, sistemic and progressive disease that leads to irreversible destruction of cartilage and bone. In vivo and in vitro experimental studies using photobiomodulation therapy have shown positive effects on the modulation of factors that cause disease progression. The objective of this work was to evaluate the effects of photobiomodulation therapy in the treatment of induced Rheumatoid Arthritis (RA) in relation to biochemical and functional aspects. Methodology: Wistar rats were used, divided into groups, CTL (control), RA (Rheumatoid Arthritis), and RA + PBM. For the induction of RA, 3 injections of the lesion-induction solution (CIA) were used on days 1, 7 and 21 days after last induction. For groups that received PBM treatment (808 nm; 2J; 100mW) irradiation started immediately after the last induction. The strength (Fmax) and maximum deformation (Dmax) supported by the cartilage until the momento f rupture were evaluated. The quantification of the gene expression of MMPs 2, 9, 13 and TNF-α was performed. Results: the results of the evaluation of cell proliferation showed that the NT group showed a reduction in cell proliferation after 48 hours. PBM reduced the biomechanical changes caused by RA and the expression of MMPs 2, 9, 13 and TNF-α preventing disease progression. Conclusion: PBM promoted an improvement in the functional and biomechanical characteristics, reducing the impact on cartilage resistance and reducing the expression. Of MMPs. Suggesting that it is an important therapy in the treatment of rheumatoid arthritis with no known side effects. Key words: Photobiomodulation. Rheumatoid Arthritis. Metalloproteinases. Chondrocytes. Mechanical properties.

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