



Low Level Laser Therapy & collagen and elastic fibers clinical research

Photomedicine and Laser Surgery

Effect of Low-Level Laser Therapy on Inflammatory Reactions during Wound Healing: Comparison with Meloxicam

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Objective: This study evaluated the action of low-level laser therapy (LLLT) on the modulation of inflammatory reactions during wound healing in comparison with meloxicam. *Background Data:* LLLT has been recommended for the postoperative period because of its ability to speed healing of wounds. However, data in the literature

are in disagreement about its anti-inflammatory action. *Methods:* Standardized circular wounds were made on the backs of 64 Wistar rats. The animals were divided into four groups according to the selected postoperative therapy: group A–control; group B–administration of meloxicam; and groups C and D–irradiation with red ($\lambda = 685$ nm) and infrared ($\lambda = 830$ nm) laser energy, respectively. The animals were killed at 12, 36, and 72 h and 7 days after the procedure. *Results:* Microscopic analysis revealed significant vascular activation of irradiated sites in the first 36 h. Only group B showed decreases in the intensity of polymorphonuclear infiltrates and edema. Group D showed a higher degree of organization and maturation of collagen fibers than the other groups at 72 h. The animals in group C showed the best healing pattern at 7 days. The anti-inflammatory action of meloxicam was confirmed by the results obtained in this research. The quantification of interleukin-1 β (IL-1 β) mRNA by real-time polymerase chain reaction (PCR) did not show any reduction in the inflammatory process in the irradiated groups when compared to the other groups. *Conclusions:* LLLT improves the quality of histologic repair and is useful during wound healing. However, with the methods used in this study the laser energy did not minimize tissue inflammatory reactions.

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