

## Photobiomodulation on the Angiogenesis of Skin Wounds in Rats Using Different Light Sources

Adalberto Vieira Corazza, Dr. Jacks Jorge, Cristina Kurachi and Vanderlei Salvador Bagnato.  
Photomedicine and Laser Surgery. 2007 April, 25(2): 102-106. doi:10.1089/pho.2006.2011.

**Objective:** The aim of this study was to compare the angiogenic effects of laser and light-emitting diode (LED) illumination on wounds induced in rats, with varied fluence.

**Background Data:** The LED is an alternative light source that accelerates wound healing, and its efficiency concerning the angiogenic effect was compared to low-level laser therapy (LLLT).

**Methods:** The experimental model consisted of a circular wound inflicted on the quadriceps of 120 rats, using a 15-mm-diameter "punch." Animals were divided randomly into five groups: two groups of laser, with dosages of 5 and 20 J/cm<sup>2</sup>, respectively, two groups of LED, also with dosages of 5 and 20 J/cm<sup>2</sup>, and a control group. Six hours after wound infliction, the treated groups received the diverse applications accordingly and were irradiated every 24 h. Angiogenesis was studied through histomorphometry on days 3, 7, 14, and 21 after the wounds were inflicted.

**Results:** On days 3, 7, and 14, the proliferation of blood vessels in all irradiated groups was superior in comparison to those of the control group ( $p < 0.05$ ). Treatment with fluence of 5 J/cm<sup>2</sup> was better than the laser group with 20 J/cm<sup>2</sup> on day 21.

**Conclusion:** Red LLLT and LED demonstrated expressive results in angiogenesis. Light coherence was shown not to be essential to angiogenesis. However, further studies are needed in order to investigate the photobiomodulatory effects of LED in relation to LLLT in various biological tissues.