

# Low-Level Light Stimulates Excisional Wound Healing in Mice

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## Abstract

**Background:** Low levels of laser or non-coherent light, termed low-level light therapy (LLLT) have been reported to accelerate some phases of wound healing, but its clinical use remains controversial.

**Methods:** A full thickness dorsal excisional wound in mice was treated with a single exposure to light of various wavelengths and fluences 30 minutes after wounding. Wound areas were measured until complete healing and immunofluorescence staining of tissue samples was carried out.

**Results:** Wound healing was significantly stimulated in BALB/c and SKH1 hairless mice but not in C57BL/6 mice. Illuminated wounds started to contract while control wounds initially expanded for the first 24 hours. We found a biphasic dose–response curve for fluence of 635-nm light with a maximum positive effect at 2 J/cm<sup>2</sup>. Eight hundred twenty nanometer was found to be the best wavelength tested compared to 635, 670, and 720 nm. We found no difference between non-coherent 635\_15-nm light from a lamp and coherent 633-nm light from a He/Ne laser. LLLT increased the number of a-smooth muscle actin (SMA)-positive cells at the wound edge.

**Conclusion:** LLLT stimulates wound contraction in susceptible mouse strains but the mechanism remains uncertain.