

Laser for Wounds and Decreasing Infection/Bacteria

Laser Light Kills Staph

printed in *Photomedicine and Laser Surgery* online.

Resistant bacterial infections represent an important and increasing public health threat. At present, fewer than 5% of staphylococcal strains, or prominent community-acquired and hospital-acquired strains, are susceptible to penicillin, while approximately 40%-50% of Staph aureus isolated have developed resistance to newer semisynthetic antibiotics such as methicillin as well.

Two common strains of methicillin-resistant Staphylococcus aureus, commonly known as MRSA, were virtually eradicated in the laboratory by exposing them to a wavelength of blue light, demonstrating that photo-irradiation using 405-nm light destroys MRSA strains grown in culture. In the current study, "Blue 470-nm Light Kills Methicillin-Resistant Staphylococcus aureus (MRSA) in Vitro," the authors exposed bacterial colonies of MRSA to various doses of 470-nm light, which emits no UV radiation.

Laser Therapy For Pressure Ulcers

Lanzafame RJ; Stadler I; Coleman J; Haerum B; Oskoui P; Whittaker M; Zhang RY *Photomedicine and laser surgery*; VOL: 22 (6); p. 483-8 /200412/ The Laser Center, Rochester General Hospital, Rochester, New York, USA. ray.lanzafame@viahealth.org

OBJECTIVE: This study was performed to evaluate the effectiveness of near-infrared low-level laser therapy (LLLT) treatment of pressure ulcers under temperature-controlled conditions.

The authors concluded that low-level laser therapy contributed to a larger expression of collagen and elastic fibers during the early phases of the wound healing process.

Conclusion: The LLLT is an effective treatment for enhancing wound contraction of partial-thickness abrasions. It also facilitates wound contraction of untreated wounds on the same arm, suggesting an indirect effect on surrounding tissues. Although our data focused on enhanced contraction of superficial wounds, we believe they are the first step in formulating meaningful conclusions regarding LLLT. Further controlled data are necessary to determine the efficacy of LLLT in facilitating healing and reducing pain associated with musculoskeletal disorders.

Low Level Blue Light Kills Staph

J. Ty Hopkins*; Todd A. McLoda†; Jeff G. Seegmiller‡; G. David Baxter§
*Brigham Young University, Provo, UT; †Illinois State

Objective: Low-level laser therapy (LLLT) has been promoted for its beneficial effects on tissue healing and pain relief. However, according to the results of in vivo studies, the effectiveness of this modality varies. Our purpose was to assess the putative effects of LLLT on healing using an experimental wound model. **Design and Setting:** We used a randomized, triple-blind, placebo-controlled design with 2 within-subjects factors (wound and time) and 1 between-subjects factor (group). Data were collected in the laboratory setting. **Subjects:** Twenty-two healthy subjects (age 5-21)

The authors report that the higher the dose of 470-nm blue light, the more bacteria were killed. High-dose photo-irradiation was able to destroy 90.4% of the US-300 colonies and the IS-853 colonies. The effectiveness of blue light in vitro suggests that it should also be effective in human cases of MRSA infection, and particularly in cutaneous and subcutaneous infections. "It is inspiring that an inexpensive naturally visible wavelength of light can eradicate two common strains of MRSA. Developing strategies that are capable of destroying MRSA, using mechanisms that would not lead to further antibiotic resistance, is timely and important for us and our patients," says Chukuka S. Enwemeka, PhD, FACS, Co-Editor-in-Chief of the Journal and first author of the study.

Superior bactericidal effect with 405 nm light, Strong bacteria kill rates—as much as 93.8% for *P. aeruginosa*, and 72% for *S. aureus*. The combination of wavelengths was less effective than the singular effect of the 405 nm beam,

ACNE- combining blue 415 nm and red 660 nm light resolves the symptoms of acne better than blue light alone.

Low-Level Laser Therapy Increases Transforming Growth Factor

Adeir Moreira Rocha Júnior,¹ Beatriz Juliúo Vieira,² Luís Carlos Ferreira de Andrade,³ and Fernando Monteiro Aarestrup⁴

RESULTS: The analysis of the biochemical parameters and histopathological parameters of the wounds showed that the laser-treated group healed faster and better as compared to the control group. The laser-treated group healed on average by 18th day whereas, the control group healed on average by the 59th day.

CONCLUSION: Laser photostimulation promotes the tissue repair process of diabetic wounds.

