

## Snakebite

[Photomed Laser Surg.](#) 2009 Jun 16. [Epub ahead of print]

### **Effect of Low-Level Laser Therapy in the Myonecrosis Induced by Bothrops jararacussu Snake Venom.**

[Barbosa AM](#), [Villaverde AB](#), [Sousa LG](#), [Munin E](#), [Fernandez CM](#), [Cogo JC](#), [Zamuner SR](#).

1 Laboratory of Inflammation, Institute of Research and Development, University of Vale do Paraíba (UNIVAP), São Jose dos Campos, SP, Brazil .

**Abstract Objective:** The aim of this work was to investigate the capacity of low-level laser therapy (LLLT) alone or in combination with antivenom (AV) to reduce myonecrosis induced by Bothrops jararacussu snake venom. **Background Data:** Myonecrosis is the most pronounced local effect caused by B. jararacussu venom. AV therapy and other first-aid treatments do not reverse these local effects. **Material and Methods:** Male Swiss mice were used. Myonecrosis was induced by injection of 0.6 mg/kg of B. jararacussu venom in the right gastrocnemius muscle and was evaluated at 3 or 24 h after venom injection. The site of venom administration was irradiated for 29 s with a low power semiconductor laser (685 nm) at a dose of 4.2 J/cm<sup>2</sup>. Intravenous AV therapy (0.5 mL dose) was administered at different times: 30 min before venom injection or 0, 1, or 3 h afterward. Both AV therapy and LLLT treatments were duplicated in mice groups killed at 3 or 24 h. **Results:** B. jararacussu venom caused a significant myonecrotic effect 3 and 24 h after venom injection. LLLT significantly reduced myonecrosis by 83.5% at 24 h ( $p < 0.05$ ) but not at 3 h, and AV therapy alone was ineffective for reducing myonecrosis at 3 and 24 h. **Conclusion:** Only LLLT significantly reduced myonecrosis of the envenomed muscle, suggesting that LLLT is a potentially therapeutic approach for treating the local effects of B. jararacussu venom.

[Toxicol.](#) 2008 Mar 10 [Epub ahead of print]

### **Effect of low-level laser therapy in the inflammatory response induced by Bothrops jararacussu snake venom.**

[Barbosa AM](#), [Villaverde AB](#), [Guimarães-Souza L](#), [Ribeiro W](#), [Cogo JC](#), [Zamuner SR](#).

Laboratory of Inflammation, Institute of Research and Development, University of Vale do Paraíba, Av. Shishima Hifumi, 2911, Urbanova, CEP 12244-000, São José dos Campos, SP, Brazil.

This article reports the effect of low-level laser therapy (LLLT) on the edema formation and leukocyte influx caused by *Bothrops jararacussu* snake venom as an alternative treatment for *Bothrops* snakebites. The inflammatory reaction was induced by injection of 0.6mg/kg of *B. jararacussu* venom, in gastrocnemius muscle. Cell influx and edema were evaluated at 3 or 24h after venom injection. Mice were irradiated at the site of injury by a low-level laser (685nm) with a dose of 4.2J/cm<sup>2</sup>. A therapy that combines LLLT and antivenom was also studied. *B. jararacussu* venom caused a significant edema formation 3 and 24h after its injection, and a prominent leukocyte infiltrate composed predominantly of neutrophils at 24h after venom inoculation. LLLT significantly reduced edema formation by 53% and 64% at 3 and 24h, respectively, and resulted in a reduction of neutrophils accumulation (P<0.05). The combined therapy showed to be more efficient than each therapy acting separately. In conclusion, LLLT significantly reduced the edema and leukocyte influx into the envenomed muscle, suggesting that LLLT should be considered as a potentially therapeutic approach for the treatment of the local effects of *Bothrops* species.

## **LLLT ON DAMAGED MUSCLE CAUSED BY BOTHROPS MOOJENI SNAKE VENOM.**

Dourado DM, Cruz-Höfling MA.

The venom of the *bothrops moojeni* snake was injected into the gastrocnemius of mice to mimic the effect of a snakebite. Traditional therapies for this snakebite have proven less effective. Three groups were tested: A=saline, B=venom and C=venom+ laser. Two sessions of HeNe laser at 4 J/cm<sup>2</sup> during 1 m 32 s were administered and the animals were sacrificed at 24 h, 3 d and 7 d, respectively. The analysis showed myonecrosis with inflammation and an extensive area of degenerated fibres. In the laser group there was, by day 3, an incipient number of regenerating fibres. Laser accelerated the phagocytosis of fibre remnants and recovery of the tissue, decreasing the oedema and increasing regeneration.