



## Low Level Laser Therapy & Inflammatory clinical research

### Low-Level Laser Irradiation Attenuates Production of Reactive Oxygen Species by Human Neutrophils

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*Objective:* The aim of this study was to examine the effects of low-level laser therapy (LLLT) on production of reactive oxygen (ROS) species by human neutrophils.

*Background Data:* LLLT is an effective therapeutic modality for inflammatory conditions.

*Materials and Methods:* The laser device used was the infrared diode laser (GaAlAs), 830-nm continuous wave (150 mW/cm<sup>2</sup>). After irradiation, ROS production by neutrophils was measured using luminol-dependent chemiluminescence (LmCL) and expression of CD11b and CD16 on neutrophil surface was measured by flow cytometry.

*Results:* The LmCL response of neutrophils was reduced by laser irradiation at 60 min prior to the stimulation with opsonized zymosan and calcium ionophore. The attenuating effect of LLLT was larger in neutrophils of smokers than non-smokers, while the amount of produced ROS was larger in neutrophils of smokers. Expression of CD11b and CD16 on neutrophil surface was not affected by LLLT. *Conclusion:* Attenuation of ROS production by neutrophils may play a role in the effects of LLLT in the treatment of inflammatory tissues. There is a possible usage of LLLT to improve wound healing in smokers.

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