



Biomodulation of Inflammatory Cytokines Related to Oral Mucositis by Low-Level Laser Therapy.

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Abstract

This study evaluated the effects of LLLT on the expression of **inflammatory cytokines** related to the development of oral mucositis by gingival fibroblasts. Primary gingival fibroblasts were seeded on 24-well plates (10(5) cells/well) for 24 h. Fresh serum-free culture medium (DMEM) was then added, and cells were placed in contact with LPS (*Escherichia coli*, 1 $\mu\text{g mL}^{-1}$), followed by LLLT irradiation (LaserTABLE-InGaAsP diode prototype-780 nm, 25 mW) delivering 0, 0.5, 1.5 or 3 J cm^{-2} . Cells without contact with LPS were also irradiated with the same energy densities. Gene expression of TNF- α , IL-1 β , IL-6 and IL-8 was evaluated by Real-Time PCR, and protein synthesis of these **cytokines** was determined by enzyme-linked immunosorbent (ELISA) assay. Data were statistically analyzed by the Kruskal-Wallis test, complemented by the Mann-Whitney test ($P < 0.05$). LPS treatment increased the gene expression and protein synthesis of TNF- α , IL-6 and IL-8, while the expression of IL-1 β was not affected. For LPS-treated groups, LLLT promoted significant decreases in the expression of TNF- α , IL-6, and IL-8 at 1.5 J cm^{-2} and 3 J cm^{-2} . **These results demonstrate that LLLT promoted a beneficial biomodulatory effect on the expression of inflammatory cytokines related to oral mucositis by human gingival fibroblasts.**

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