

## The Effects of Low Level Laser Therapy on the Expression of Collagen Type I Gene and Proliferation of Human Gingival Fibroblasts (Hgf3-Pi 53): in vitro Study

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### Background

Recent investigations show that both proliferation and secretion of macromolecules by cells can be regulated by low level laser therapy (LLLT). The aim of this study was to determine whether LLLT could induce a bio-stimulatory effects on human gingival fibroblasts (HGF3-PI 53). Therefore, the effect of laser irradiation on human gingival cell proliferation and collagen type I gene expression was studied.

### Methods:

HGF3-PI 53 were cultured in 96-well plate and then irradiated with LLLT gallium-aluminum-arsenide (Ga-Al-As), 810 nm, 50 mW diode laser (energy: 4 J/cm<sup>2</sup>) for three consecutive days. The cell proliferation was measured on days 1, 2 and 3 after irradiation with LLLT using MTT assay. Real time PCR analysis was utilized on day 3 to evaluate the expression of collagen type I gene.

### Results:

Evaluation of cellular proliferation, one day after laser treatment showed no difference compared to control group. But on days 2 and 3, significant increase in proliferation was observed in the irradiated cell populations in comparison to the control group. Treatment of HGF3-PI 53 by laser resulted in a significant increase in collagen I gene expression on 3 day.

### Conclusion:

The results demonstrated that LLLT stimulated human gingival fibroblast proliferation as well as collagen type I gene expression in vitro.

**Keyword:** Collagen Type I, Gingival Fibroblasts, Laser Therapy.

### Poster Presentation

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