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Response of low intensity laser irradiation on collagen production in diabetic wounded fibroblast cells in vitro

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Abstract content
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Background: Collagen Type I (Col-I) is a major component of the extracellular matrix (ECM) and is important in wound healing processes. Several studies have shown that Low Intensity Laser Irradiation (LILI) biostimulates Col-I synthesis both in vitro and in vivo. Diabetic patients are known to suffer from slow-to-heal wounds and collagen production in these patients is impaired. This study aimed to determine if LILI affects collagen production and related cellular responses in an in vitro diabetic wounded fibroblast model. Method: This study was performed on isolated human skin fibroblasts. Different cell models namely; normal and diabetic wounded were used. Cells were irradiated with 5 J/cm² at a wavelength of 660 nm and incubated for 48 or 72 hours. Non-irradiated cells (0 J/cm²) were used as controls. Cellular viability (Trypan blue), morphology (Bright Field Microscopy), proliferation (VisionBlue Quick Cell Proliferation Assay), and Col-I (Enzyme Linked Immunoabsorbent Assay, ELISA, and Sircol Assay) were assessed. Results: Diabetic wounded cells irradiated with 5 J/cm² at 660 nm showed a significant increase in cell migration, viability, proliferation and Col-I. Conclusion: This study shows that LILI stimulates Col-I synthesis in diabetic wound healing in vitro at 660 nm.

Apply to be
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Level for award
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Msc

Main supervisor (name and email)
and his / her institution

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