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Nuclear translocation of Map Kinase and release of basic fibroblast growth factor following photobiomodulation at 660 nm in diabetic wounded cells.

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Mitogen Activated Protein Kinase (MAPK) signalling is one of the best characterised signal transduction pathways in cell biology and is involved in wound healing processes. Photobiomodulation (PBM) has been used to induce physiological changes and has been shown to improve wound healing processes, however underlying molecular and cellular mechanisms of action remain largely unexplained. The purpose of this study was to determine the effect of PBM at 660 nm on nuclear translocation of MAPK and release of basic fibroblast growth factor (b-FGF) in diabetic wounded fibroblast cells in vitro. This was evaluated by irradiating cells at a wavelength of 660 nm with 5 J/cm2 and incubating them for 24 and 48 h. Non-irradiated cells (0 J/cm2) served as controls. b-FGF was measured by the Enzyme Linked Immunosorbent Assay (ELISA) and translocation of phosphorylated MAPK was assessed by immunofluorescence. PBM of diabetic wounded cells showed an increased release of b-FGF and translocation of MAPK in irradiated cells at 24 and 48 h as compared to non-irradiated cells. The findings of this study showed that PBM is capable of facilitating the releasing of b-FGF and activation of MAPK in diabetic wound cells in vitro, thus facilitating wound healing under diabetic conditions.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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