

Introducing: Photobiomodulation by low energy chromophore-induced fluorescent light

NIELSEN, M. *ET AL.*, 2017

INTRODUCTION

Authors induced photobiomodulation in different cultured human cells with two main goals:

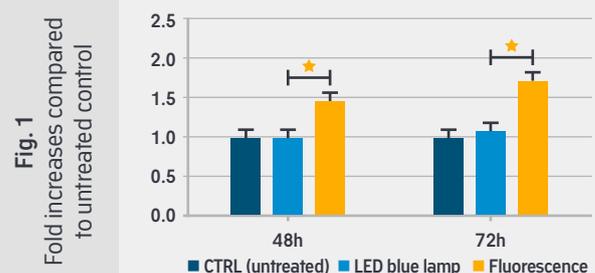
- Measure the differences on fibroblast proliferation. Cells were treated with: a) Fluorescence (gel and LED blue lamp), b) LED blue lamp and c) not treated (CTRL).
- Measure the differences on angiogenesis and on tube formation. Cells were treated with: a) Fluorescence (gel and LED blue lamp), b) LED blue lamp, c) untreated (CTRL) and Vascular Endothelial Growth Factor (VEGF) as a positive control to promote angiogenesis and tube formation.

RESULTS

EFFECT ON FIBROBLAST PROLIFERATION (Fig. 1)

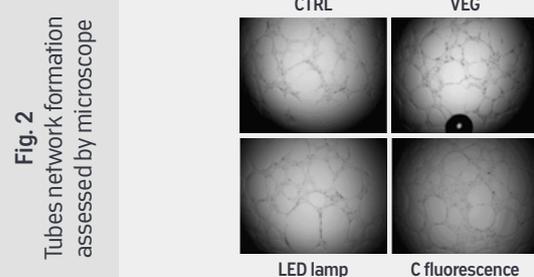
The cell proliferation was measured at 48 and 72h after the treatment.

- Total collagen production and secretion were significantly higher when treated with fluorescence in comparison to CTRL cells, and LED lamp treated cells.
- Cell proliferation was also significantly enhanced in comparison with the other two.



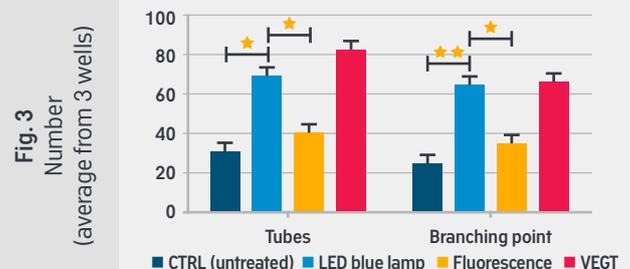
EFFECT ON ANGIOGENESIS (Fig. 2)

- The production of specific growth factors such as VEGF and angiogenin significantly increased.



EFFECT ON TUBE FORMATION (Fig. 3)

- Significant increase of tube formation (new blood vessels) with fluorescence compared to both untreated and only blue light treated samples, documenting biological effect of treatment dependent growth factors.



CONCLUSIONS

- “The treatment influenced in vitro the cell shape, cell proliferation, and production of major proteins involved in several skin healing process”
- “These demonstrated effects could lead to the reinforcement and revitalization of the skin organization and structure and thus have a major clinical importance”