

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:

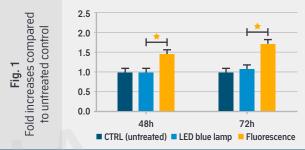
- Measure the differences on fibroblast proliferation. Cells were treated with: a) Fluorescence (gel and LED blue lamp), b) LED blue lamp and c) not treated (CTRL).
- Measure the differences on angiogenesis and on tube formation. Cells were treated with: a) Fluorescence (gel and LED blue lamp),
 b) LED 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)

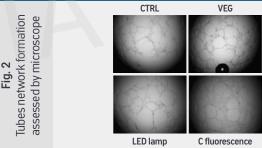
The cell proliferation was measured at 48 and 72h after the treatment.

- 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.



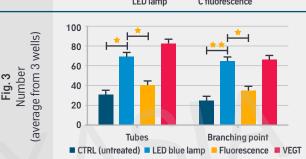
EFFECT ON ANGIOGENESIS (Fig. 2)

• 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"