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FLUORESCENT LIGHT ENERGY IN WOUND HEALING: WHEN IS A PHOTON SOMETHING MORE?

ZAGO *ET AL.*, 2020

INTRODUCTION

The present study investigated the role of light polarization on biological effects of Fluorescence Light Energy (FLE), focusing on IL-6 expression from inflamed human dermal fibroblast (HDF) cells as an inflammatory marker involved in wound healing. The investigation was performed by using polarizing filters (linear and right-handed circular) on FLE with respect to the blue multi-LED light.

Furthermore, the immunomodulatory impact of FLE was investigated in a pilot study on a human *ex vivo* skin model.

RESULTS AND DISCUSSION

- The right-handed circularly polarizing filter decreases the effect of FLE on IL-6 secretion from HDFs (**Fig. 1**).
- The linearly polarizing filter reduces the FLE impact on IL-6 secretion from HDFs (**Fig. 1**).

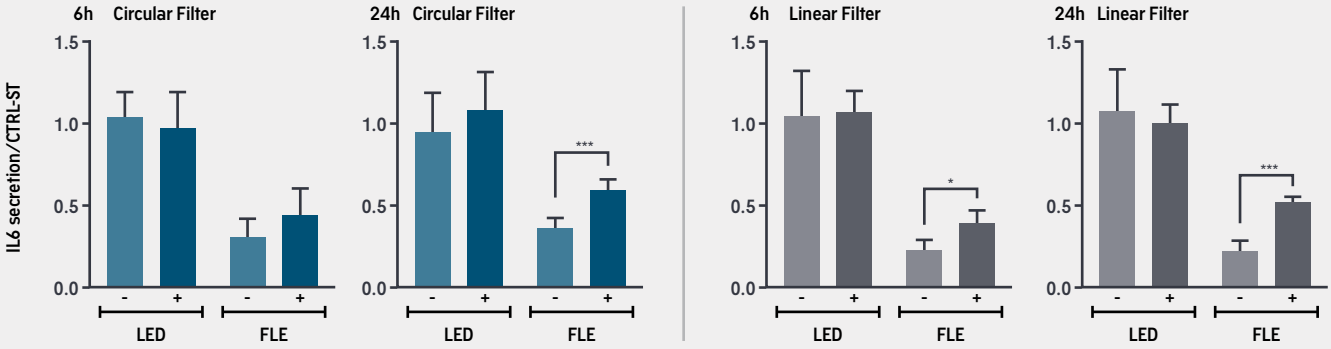

Fig. 1. Polarizing filters attenuate the effect of FLE on IL-6 expression from inflamed HDFs.

- Several myeloid immune surface markers were found to be downregulated on the transcriptional level by FLE treatment (**Fig. 2**).
- The polarizing blue light from the multi-LED lamp alone did not change the response by the HDF cells, only minor effects were observed on central myeloid surface markers regulated in human skin (**Fig. 2**).

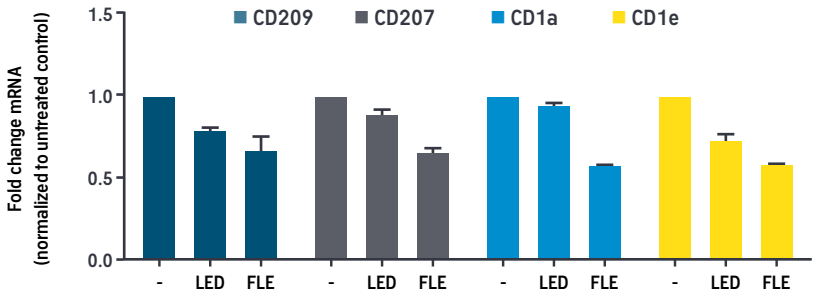

Fig. 2. FLE treatment down-regulates myeloid cell surface markers in human skin.

CONCLUSIONS

The photons emitted from the FLE substrate carry other important properties, in addition to their wavelength, to maximize the cellular response. The maximum effect of FLE on cellular responses appears to be dependent on the full FLE capacity and availability of nonpolarized photons. The pilot study on the human *ex vivo* skin model suggesting that central myeloid immune surface markers are modulated by FLE.

For more information and data, visit the original publication.

Zago *et al.*, 2020. Proc. SPIE 11221, Mechanisms of Photobiomodulation Therapy XV, 112210A.