

## COMBINATION OF PHOTOBIMODULATION THERAPY AND HYALURONIC ACID IN AN IN VITRO MODEL OF PHOTOAGING IN KERATINOCYTES AND FIBROBLASTS

Silmara Brasileiro Quaresma and Ana Paula Ligeiro de Oliveira

Graduate Program in Biophotonics Applied to Health Sciences Nove de Julho University

**Introduction:** According to the United Nations (UN) , the number of elderly people has tripled, from around 260 million in 1980 to 761 million in 2021. Aging is an inevitable process, but it is essential to understand its implications for health. Factors such as sun exposure, smoking and alcohol accelerate skin aging, damaging cells and requiring preventive care for a healthier life. Studies indicate the efficacy and safety of the simultaneous approach of Hyaluronic Acid (HA) fillers combined with Laser or LED therapies in rejuvenation. **Objective:** To evaluate the effect of the combination of photobiomodulation therapy and hyaluronic acid in an in vitro model of photoaging using UV light and cigarette smoke extract (CSE) on keratinocytes and fibroblasts. Keratinocytes and fibroblasts will be incubated at 37°C and 5% CO<sub>2</sub> until reaching subconfluence, where they will be irradiated with UV light for 24 hours. After this period, cigarette smoke extract (2.5%) can be added or not and irradiated or not with Laser (diode, 660 nm, 30 mW for 180 s) and/or HA (0.1 mg/ml ). After adequate culture time, the cells will be diluted and placed in 24-well plates, and the assay will be performed in triplicate. Cell viability and proliferation (MTT), quantification of IL-1 $\beta$ , TNF- $\alpha$ , IL-6, IL-10, IL-8, TGF- $\beta$  (ELISA), determination of glutathione peroxidase (GPx), Superoxide activities will be carried out dismutase (SOD) and catalase, as well as collagen quantification. Data will be analyzed and graphs created using GraphPad Prism 5.0 software. Data will be submitted to one-way ANOVA followed by Newman-Keuls post-test for group comparisons.

**Keywords:** Photoaging, hyaluronic acid, fibroblasts, keratinocytes, photobiomodulation therapy.



**Biography:** Silmara Brasileiro Quaresma, 36 years old. Bachelor's degree in pharmacy and biochemistry, and post-graduated in pharmaceutical care and clinical pharmacy from Nove de Julho University. Specialization in aesthetic pharmacy from the Institute of Research and Education in Health of São Paulo.