Influence of natural extracts to Improve photobiomodulation effects on HaCaT keratinocytes

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Photobiomodulation is a non-invasive therapy that uses light, generally in the red (320-750 nm) or near infrared (750-1400 nm)1 spectrum, to stimulate biological processes aimed at increasing cellular energy production, reducing inflammation and promote tissue repair[1,2]. Although favorable results on the effectiveness of this therapy have been reported, its long-term effects remain under study, as does the use of natural extracts that can improve or complement the therapy. For example aloe vera[3], resveratrol[4], turmeric[5] and green tea[6] which provide antioxidant and anti-inflammatory protection[8].
Taking advantage of a commercial 808 nm diode laser used for hair removal, two conditions were compared; the commercially used treatment (T1) and the maximum laser power (T2) to analyze the influence in cell viability and morphology in human epidermal keratinocytes (HaCaT). For a subsequent study four natural extracts (pomegranate, tomato, walnuts and squid ink) as complementary agents.
At first glance, the parameters of laser therapy have been optimized: frequency, time and power; as well as the optimal concentrations of each extract. According to the results obtained with the MTT technique, three of the four extracts improved cell viability after laser treatment, without observing any morphological changes at the cellular level.
Studies are underway that use different combinations to identify the maximum possible action, as well as proteomic analyzes that identify the active pathways that lead to this increased cell viability. With this, we seek to obtain a complex matrix as a candidate for enhancing the effects of photobiomodulation in the treatment of different dermatological conditions.

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