

IN VITRO SAFETY PROFILE OF NANOEMULSIONS CONTAINING LAVENDER ESSENTIAL OILS

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INTRODUCTION: Since ancient times, natural products have been used for their medicinal properties, many of which have already been proven in scientific studies. In the tissue healing process, topical formulations are commonly used to aid skin regeneration. Lavender essential oil is well known for its anti-inflammatory, antimicrobial and antioxidant activities, presenting promising properties for healing skin wounds. However, essential oils have some limitations that can make their clinical use difficult. In this context, nanotechnology can be a tool to increase apparent solubility, stability and ensure the good performance of these natural products. **OBJECTIVE:** To evaluate the *in vitro* safety profile of *Lavandula angustifolia* and *Lavandula dentata* essential oils in free (FO) and nanoemulsified (NE) form. **MATERIALS AND METHODS:** Nanoemulsions containing 5% essential oil were prepared by the homogenization method under high agitation using the Ultra-Turrax® equipment with cooling, and without the use of organic solvent. To verify the *in vitro* safety profile, immortalized human keratinocyte cell line (BCRJ-0341) cells were used and exposed to a concentration curve of FO and NE (0.78 - 25 µg/mL) for 24, 48 and 72h. These cells were evaluated for cell viability, levels of reactive oxygen species (ROS), levels of nitric oxide (NO) and levels of dsDNA released into the extracellular medium. **RESULTS:** The nanoemulsions containing *L. angustifolia* and *L. dentata* demonstrated an average droplet size of approximately 112 nm and 74 nm, respectively, polydispersity index lower than 0.3, negative zeta potential and acidic pH, being stable and homogeneous. *In vitro* results showed that the nanoemulsions and free oils did not present cytotoxicity. **CONCLUSION:** The results found demonstrate that both lavender species, both in their free and nanoemulsified forms, are safe at the concentrations tested and may be a promising alternative for the development of topical skin products.

Keywords: lavender; wound healing; nanotechnology; natural products; cytotoxicity.

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