



Abstract

# Stability and In Vitro Biosafety Study of an Emulsion of *Calendula officinalis* L. with Potential Application in Treating Skin Burn Wounds †

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**Abstract:** Skin burns are injuries of different degrees of complexity (first to third) caused by physical and/or chemical trauma. There is a necessity to improve the rapid retrieval of superficial wounds (first grade) to enhance epithelization, avoiding dehydration, infections, and scar formation. This work proposes an oil in water (O/W) emulsion based on 1% of *Calendula officinalis* L. extract, due to its recognized traditional uses as medicinal plant in wound care, with reported beneficial secondary metabolites such as Carotenoids, Terpenoids, Flavonoids, Coumarins, and Quinones. The rheological characterization of the obtained emulsions indicated superior stability over time (2 months) and a pseudoplastic and semisolid fluid behavior. Furthermore, the emulsions were evaluated biologically in terms of biosafety in vitro with promising results that showed a hemolytic behavior (72.66%) and a moderate platelet aggregation (73.06%) tendency, which is beneficial as it can contribute to enhancing the healing process. Additionally, the emulsions were characterized physicochemically by frequency curves, flow curves of shear stress, and viscosity. Currently, we are conducting a droplet size distribution assay, and conducting 2D wound healing assays in a scratch model over a monolayer of keratinocytes. Thus far, the results hold much promise and indicate that these emulsions can be potentially employed in the treatments of burn wounds.

**Keywords:** *Calendula officinalis* L.; burns; emulsion



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