



**PRELIMINARY AND ACCELERATED STABILITY STUDY OF NANOEMULSIONS
CONTAINING CHIA OIL (*Salvia hispânica* L.)**

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INTRODUCTION

Chia (*Salvia hispânica* L.), is a species belonging to the Lamiaceas family, native to Mexico and other Mesoamerican countries, whose seeds provide the extraction of oil, which contains high amounts of essential fatty acids linolenic and linoleic. Nanotechnology is a science based on nanometer-scale particle manipulation, creating a differentiated organizational structure with different behavior and properties than those known. An example of application is nanoemulsions (NEs), a class of emulsions whose particle size is reduced (20-500 nm), which allows greater penetration of the active through the skin layers, have a translucent or milky look, presenting an enhanced sensory aspect, compared to traditional emulsions. Thus, we sought to combine the development and stability study of a NE with an innovative plant asset.

MATERIAL AND METHODS

The NE were developed from the initial study of EHL required by the oil phase (chia oil), using Span 80® and Tween 80®, followed by the application of the low energy emulsification method. Subsequently, preliminary stability was evaluated with the ice-thaw cycle for 14 days. The best performing formulations were subjected to the study of accelerated stability during 90 days under thermal stress, observing the organoleptic characteristics, physical resistance, pH, particle size, polydispersity, zeta potential (ζ) and rheological characteristics.

RESULTS

The stable EHL was 6.0 and a formulation with 5% chia oil and 5% surfactant was obtained, with particle size of 81.20 d.nm (± 0.46) and zeta potential of -18.1 mV (± 0.86). Increasing oil concentration (10%, 15% and 20%) were tested Alkest CSO® R150 and Sepigel® (1.0%, 1.5% and 3.0%). After the ice-thaw cycle the liquid NE showed a small increase in droplet size (150.36 d.nm, ± 11.12). Sepigel® formulations showed particle size between 15.59 - 55.67 d.m, without phase separation. Three best performing NEs were selected for the accelerated stability study, one liquid with 5% oil, and two semisolids with 10% and 15% oil, which after a period of 90 days remained with particle size within the acceptable range for NEs, under all storage conditions (40.92 d.nm, 37.71 d.nm and 59.02 d.nm respectively). The semisolids remained stable regarding the organoleptic and physicochemical aspects.

CONCLUSION

The incorporation of 10% and 15% chia oil in EHL 6.0 with surfactant Alkest CSO® R150 and Sepigel® provided stable nanoemulsion with potential topical application as dermocosmetic.

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