TITLE: OBTAINING NANOEMULSION BASED ON *Spirulina* sp. LEB 18

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ABSTRACT: *Spirulina* is one of the most cultivated microalgae in the world, mainly due to the nutritional value of its biomass, which presents high potential for the extraction of bio-compounds with high added value. Microalgae are an alternative source for obtaining essential fatty acids, which are the precursors of a wide variety of bioactive metabolites. However, the way of administering these biomolecules in the body must be adequate to enable better therapeutic efficacy. Thus, the use of delivery systems such as nanoemulsions can overcome these existing limitations, offering protection against degradation, increased membrane permeability, and prolonged and/or site-specific release. Nanoemulsions have several advantages over macroemulsions, since they guarantee characteristics such as greater bioavailability of compounds, kinetic stability, transparency or translucency, besides facilitating the transport of compounds of interest. The objective of this work was to develop nanoemulsions using lipid extracted from *Spirulina* sp. LEB 18. Nanoemulsions were prepared by associating the high speed homogenizer at 10.000 rpm and ultrasonic bath. Distilled water at 30 °C and Tween® 80 surfactant at concentrations of 0, 0.5 and 1% v/v of the total aqueous phase were used as the aqueous phase. The oil phase was composed of the lipid extracted from the microalgae and a mixture of chloroform and methanol solvents (2:1). Nanoemulsions showed droplet size ranging from 195.3 ± 2.9 to 278.5 ± 0.9 nm. The Zeta Potential values, in modulus, ranged from 54.5 ± 1.1 to 32.2 ± 0.7 mV, indicating that all nanoemulsions presented electrostatic stability. The Polydispersity Index did not show a great variation during the analyzed time period (14 d), as well as the pH, which ranged from 7.7 ± 0.1 to 7.9 ± 0.1, indicating that these nanoemulsions remained stable over time. It was also possible to observe that lipids from *Spirulina* sp. LEB 18 presented stabilizing capacity, acting as a biosurfactant in the nanoemulsion.

Keywords: biosurfactant, microalgae, nanotechnology, stability

Development Agency: Ministry of Science, Technology, Innovations and Communications - MCTIC