

Essential oil-water emulsions containing a biosurfactant from *Lactobacillus paracasei*

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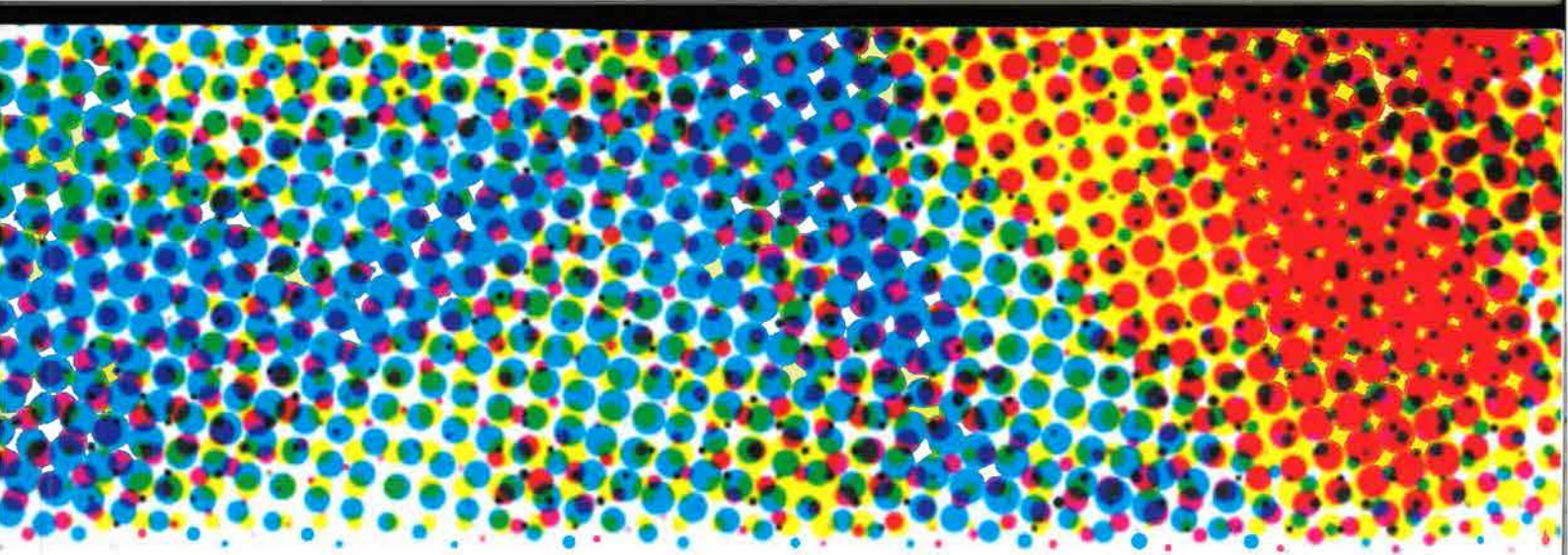
Surfactants play important roles in cosmetic products due to diverse properties including as emulsifier, foaming, wetting, detergency and solubilizer agents, among others. However, the market for beauty and personal care products based on natural ingredients has shown a relevant growth. In this sense, biosurfactants being non-toxic, biodegradable and ecofriendly natural compounds are suitable replacers of the chemical-based surfactants showing equal or better performances [1]. In addition, essential oils are natural ingredients extracted from plants that also are interesting ingredients for novel cosmetic formulations. The aim of this study was to formulate oil-water emulsions using a biosurfactant from *Lactobacillus paracasei* in combination with several essential oils (wheat germ, almond, rosemary and jojoba oil). The biosurfactant was produced in a 2-L Applikon bioreactor using a glucose-based fermentation media (supplemented with 10 g/L of yeast extract and 10 g/L of corn steep liquor) during 24h, 37 °C, pH=5.85 and 150 rpm. After this period, the cells were recovered and washed with distilled water (2 times) and afterwards used to extract the biosurfactant in phosphate buffer-saline solution [2]. Then, the biosurfactant aqueous solution (2 mL) was mixed with the essential oils (2 mL) using an IKA T25 Ultra-Turrax homogenizer during 2 min at 18000 rpm. Subsequently, the volume (EV,%) and the stability (ES,%) of the emulsions were measured during 15 days. A Leica DMI 3000B Inverted microscope equipped with a LEICA DFC450C camera was used to observe the emulsion droplets [3]. The best formulation was obtained with an almond oil-water emulsion, which gave 52.5±3.5% and 76.7±4.7% of EV and ES respectively; whereas the jojoba oil-water emulsion was not stable after 15 days. The results gathered in this work suggest the potential use of the biosurfactant from *L. paracasei* in natural cosmetic products; however further toxicity assays are necessary. Additionally, the EU Cosmetic Regulation still does not account for the incorporation of this type of ingredients.

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