SUPERCRITICAL FLUID EXTRACTION OF EMULSION OBTAINED BY ULTRASOUND EMULSIFICATION ASSISTED BY NITROGEN HYDROSTATIC PRESSURE USING NOVEL BIOSURFACTANT

Diego Tresinari dos Santos, Ricardo Abel Del Castillo Torres, Maria Thereza de Moraes Santos Gomes, Maria Angela de Almeida Meireles

LASEFI/DEA/FEA (School of Food Engineering)/UNICAMP (University of Campinas) Cidade Universitária "Zeferino Vaz", Rua Monteiro Lobato, 80, Campinas, 13083-862, Brazil

Recently, there has been increasing interest within the industry in replacing synthetic ingredients with natural "label friendly" alternatives. Surfactants are widely used in the food industry to form and stabilize emulsion-based food and beverage products. The choice of the surfactant and method used to produce emulsions is crucial. Thus in this work, first it was evaluated the influence of hydrostatic pressure levels (up to 10 bars applying nitrogen), oily phase type and surfactant type were evaluated. In addition, the effect of saponin-rich extract solution concentration obtained from Brazilian Ginseng (*Pfaffia glomerata*) roots using hot pressurized water as extracting solvent was also evaluated to further processing of this emulsion by Supercritical Fluid Extraction of Emulsions (SFEE) process, using an oily bixin-rich extract from annatto seeds (*Bixa orellana L.*) as core material (extracting solution from hot ethyl acetate pressurized liquid extraction). Since, the final product of SFFE achieved a very low residual ethyl acetate concentration (9.4 ppm) and the regarding droplet size similar results were obtained for the emulsion (549 nm) and the produced suspention (569 nm), which were 24.74 % lower that when no pressurized nitrogen atmosphere were used (730 nm) we proposed the use of this alternative biosurfactant and the process that we named Ultrasound Emulsification Assisted by Nitrogen Hydrostatic Pressure (UEANHP), during the emulsification preparation step of the Supercritical Fluid Extraction of Emulsions (SFEE) process.