EVALUATION OF CHITOSAN ON THE STABILITY OF EMULSIONS USED AS POTENTIAL DELIVERY SYSTEM

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Microencapsulation is an alternative for protection of bioactive compounds which can also be associated to controlled release. Emulsion is an encapsulation technique quite simple that allows the incorporation of bioactives with different solubility from the continuous phase. Chitosan is capable of adsorbing to the surface of lipids droplets forming interfacial complexes, and has desirable controlled release properties. Thus, the objective of this work was to evaluate the emulsion properties stabilized by chitosan. Emulsions containing 20% soybean oil were prepared under high pressure at pH 3.5. Surfactant (1% v/v) and chitosan (0.1 to 2.5% w/v) were added as stabilizers. Emulsions were analyzed according to its stability, droplets size distribution (DSD) and rheology. All emulsions were unstable, but the increase of chitosan concentration tended to diminish the serum release. However the lower phase separation was achieved for the lower chitosan concentration (0.1%w/v). Most of cream phases showed bimodal size distribution except for sample with 0.1 and 0.5% of chitosan, which presented monomodal distribution, and size ranging between 1 and 10 µm. The flow curves of all cream phases showed shear-thinning behavior, and the 0.1 and 0.5% presented anti-thixotropy. The apparent viscosity (100s^{-1}) of the emulsions decreased with decreasing concentration. At low shear rate (3s^{-1}), viscosity apparent showed the highest value for 0.5 and 1.5% (v/v). The mechanical spectra of cream phase showed increase of G* with increasing frequency. The results indicate that low chitosan concentrations could be a better alternative for encapsulating hydrophobic compounds in emulsions based delivery system.

Acknowledgements: FAPESP, CAPES, CNPq