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TRAPPING OF BETANIN IN ALGINATE MICROCAPSULES: STABILITY STUDIES UNDER ACCELERATED CONDITIONS

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Abstract

Microcapsules including red beet extract rich in betanin were produced by ionic gelation. Sodium alginate was used as wall material. Impacts of coating amount and active material were assessed with encapsulation efficiency (EE) of the capsules in terms of total phenolic content (TPC). Encapsulation of the red beet extract in alginate microbeads was satisfying with >80% under the best conditions of ionic gelation (15% calcium chloride concentration and 2% sodium alginate for 15 min of hardening time). The interaction between the active material and the alginate beads was also investigated by diffuse reflectance fourier transform (DRIFT) spectroscopy. Scanning electron microscopy (SEM) was used to comprehend the morphology. Shape properties were determined with sphericity factor (SF) and the roundness (Rn) by stereo-microscope. Accelerated oxidation test was employed to measure the stability of the microcapsules by Rancimat method. Stability of the microbeads were evaluated in terms of kinetic and thermodynamic analyzes.

Key words: biopolymers, encapsulation, particle morphology, phenolic compounds

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