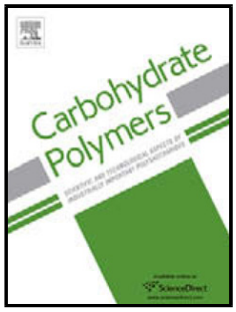

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Release of yerba mate antioxidants from corn starch-alginate capsules as affected by structure

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Abstract

Encapsulation of yerba mate (*Ilex paraguariensis*) extract in a proper matrix enhances the possible applications of this natural antioxidant in food systems. To start, calcium alginate capsules were used as carriers of yerba mate extract and a filler material (corn starch at 2 %) was added to the alginate matrix to improve the structural properties and to modulate the release of the active compounds. Next, kinetics and swelling mechanisms involved in the release of yerba mate polyphenols in simulated digestive fluids were analyzed. A lower rate of release was obtained with calcium alginate-starch capsules as compared to control ones, which was attributed to the lower porosity of filled capsules. The release profiles of both systems were satisfactorily fitted with semi-empirical models, which indicated that a combined mechanism of polymer-chain relaxation and diffusion was taking place.

Keywords

Natural antioxidants; Porosity; Encapsulation; Calcium alginate; Starch; Controlled release.