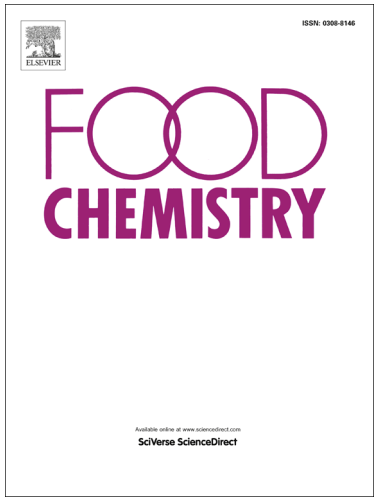

Microencapsulation of extracts of bioactive compounds obtained from acerola (*Malpighia emarginata* DC) pulp and residue by spray and freeze drying: Chemical, morphological and chemometric characterization

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Microencapsulation of extracts of bioactive compounds obtained from acerola (*Malpighia emarginata* DC) pulp and residue by spray and freeze drying: Chemical, morphological and chemometric characterization

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Abstract

The acerola pulp and residue extracts were microencapsulated by spray and freeze-drying, using gum arabic and maltodextrin as encapsulating agents. Total anthocyanins, carotenoids (CA), ascorbic acid (AA), phenolic compounds (PC), total flavonoids, antioxidant activity, color, moisture, water activity, solubility, hygroscopicity and microstructure of the powders were analyzed. The acerola residue extract had higher concentrations of bioactive compounds (except for AA) and lower antioxidant activity. The microencapsulated powders by spray and freeze-drying showed good physico-chemical properties. Spray-dried powder has lower microencapsulation efficiency for CA, AA and PC and in general, it presented the best characteristics due to its higher concentration of bioactive compounds (except AA), and antioxidant activity by FRAP and ORAC assays. The spray-dried particles were of spherical shape while the freeze-dried products were of irregular structures. Overall, these results demonstrate the better utility of agro-industrial acerola residue in the form of microparticles of bioactive compounds, retaining good antioxidant activity.

Keywords