

Preparation of Encapsulated Turmeric Extract for Food Fortification

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ABSTRACT

Introduction

Cross-linked alginate beads containing turmeric extract were produced using the electrospraying method to achieve the release of bioactive compounds in a sustained manner.

Methods

An aqueous alginate solution containing turmeric extract was electrosprayed into an aqueous phase containing a cross-linking agent (calcium chloride) at different process variables (alginate concentrations, flow rates and voltages). Then, particle size and distribution were investigated with an optical microscope.

Results

Prepared alginate beads with 1 wt % alginate concentration, 20 kV and 1 ml/h exhibited the desired beads with turmeric extract content. Alginate beads containing turmeric extract were kept in water for 72 hours and total amount of antioxidant and total amount of phenol which was released to liquid were investigated. Afterwards, solution with alginate beads were centrifuged and dried to observe structural changes. Total antioxidant activity and total phenol in the dried beads were studied. Some samples released most amount of antioxidants and phenol to the medium. Similarly, some samples kept all antioxidants and phenol.

Conclusion

In conclusion, electroencapsulation can be used in food applications in order to conserve the bioactivity of active compounds.

Keywords: turmeric, electrospray, alginate, microencapsulation, fortification, antioxidant.