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Preparation of Eleutherine americana-Alginate complex microcapsules and application in Bifidobacterium longum

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Microencapsulation using extrusion and emulsion techniques was prepared for *Bifidobacterium longum* protection against sequential exposure to simulated gastric and intestinal juices, refrigeration storage, and heat treatment. *Eleutherine americana* was used as co-encapsulating agents. Hydrolysis of *E. americana* by the juices was also determined. *E. americana* and its oligosaccharides extract demonstrated their resistance to low pH and partial tolerance to human α-amylase. Microencapsulated *B. longum* with *E. americana* and oligosaccharides extract prepared by extrusion technique survived better than emulsion technique under adverse conditions. Survival of microencapsulated cells after exposure to the juices and refrigeration storage was higher than free cells at week 2 and 4. In addition, viability of microencapsulated cells was better than free cells at 65°C for 15 min. This work suggested that microencapsulated B. longum with *E. americana* offers effective delivery of probiotic to colon and maintaining their survival in food products.

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