

Encapsulated probiotics: potential techniques and coating materials for non-dairy food applications

ABSTRACT

The growing health awareness among consumers has increased the demand for non-dairybased products containing probiotics. However, the incorporation of probiotics in non-dairy matrices is challenging, and probiotics tend to have a low survival rate in these matrices and subsequently perform poorly in the gastrointestinal system. Encapsulation of probiotics with a physical barrier could preserve the survivability of probiotics and subsequently improve delivery efficiency to the host. This article aimed to review the effectiveness of encapsulation techniques (coacervation, extrusion, emulsion, spray-drying, freeze-drying, fluidized bed coating, spray chilling, layer-by-layer, and coencapsulation) and biomaterials (carbohydrate-, fat-, and protein-based) on the viability of probiotics under the harsh conditions of food processing, storage, and along the gastrointestinal passage. Recent studies on probiotic encapsulations using non-dairy food matrices, such as fruits, fruit and vegetable juices, fermented rice beverages, tea, jelly-like desserts, bakery products, sauces, and gum products, were also included in this review. Overall, co-encapsulation of probiotics with prebiotics was found to be effective in preserving the viability of probiotics in non-dairy food matrices. Encapsulation techniques could add value and widen the application of probiotics in the non-dairy food market and future perspectives in this area.