Effects of process variables on the encapsulation of oil in ca-alginate capsules using an inverse gelation technique

Abstrak

The objective of this study was to investigate the effects of process variables on the encapsulation of oil in a calcium alginate membrane using an inverse gelation technique. A dispersion of calcium chloride solution in sunflower oil (water-in-oil emulsion) was added dropwise to the alginate solution. The migration of calcium ions to the alginate solution initiates the formation of a ca-alginate membrane around the emulsion droplets. The membrane thickness of wet capsules and the elastic modulus of dry capsules increased following first-order kinetics with an increasing curing time. An increase in the calcium chloride concentration increased the membrane thickness of wet capsules and the elastic modulus of dry capsules. An increase in the alginate concentration decreased the mean diameter of wet capsules but increased the elastic modulus of dry capsules.