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Effect of tween as crosslinking agent in the preparation of coacervated essential oil microparticles

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Abstract

Microencapsulation is one of the quality preservation techniques of sensitive substances such as essential oil. Thyme essential oil has been described as a potent antimicrobial, antifungal, and antioxidant agent. However, they are unstable and susceptible to degradation when exposed to environmental stresses like oxygen, temperature, and light therefore, attempts have been made to preserve them through encapsulation in various colloidal systems such as microcapsules. Microencapsulation consists of enclosing micron-sized particles in a polymeric shell. There are different techniques available for the encapsulation. This work deals with the study of thyme essential oil encapsulation by complex coacervation method using gelatin- gum arabic with a ratio of 2 and 2 % respectively. Microcapsules were crosslinked by tween. The encapsulation efficiency accounts for 70% of the oil used in the encapsulation process. Optical microscopy and scanning electron microscopy studies confirmed microcapsules with different sizes. The technological properties of capsules shown high potential to be applied in many industrial fields such as pharmaceutical, flavor, perfume, food, agriculture and detergent.

Keywords : Encapsulation, Essential oil, Complex coacervation, Microparticles.