

Chitosan: an attractive biocompatible polymer for microencapsulation

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Abstract

Microencapsulation technologies have received a continuously growing attention in the last decades, resulting in a great amount of encapsulated systems that are at present employed in industry, agriculture, medicine, pharmacy and biotechnology.

Microencapsulation with polymer matrices has been performed with different purposes, in dependence on the particular application desired. For example, in medicine and pharmacy it has been used for masking unpleasant tastes or odors, the controlled release of drugs, the protection of drugs from the aggressive body fluids, such as gastric fluids, the immunoisolation of cells and in immunoassays, among others.

Chitosan is a weak cationic polysaccharide composed essentially by $\beta(1-4)$ linked glucosamine units together with some proportion of N-acetylglucosamine units, that is obtained by extensive deacetylation of chitin, a polysaccharide widely spread in nature. Chitosan is a biocompatible, biodegradable and non-toxic natural polymer that exhibits excellent film forming ability, and due to its cationic character it is able to react with polyanions giving rise to polyelectrolyte complexes. Therefore, because of these interesting properties, it has become the subject of numerous scientific reports and patents on the preparation of microspheres and microcapsules, including some reviews on the subject^{1,2}

The techniques employed to encapsulate with chitosan include ionotropic gelation, spray drying, suspension crosslinking, simple and complex coacervation, suspension polymerization of a vinyl monomer in the presence of chitosan, among others. The aim of this presentation is to review some of the more common techniques used and to put forward the results obtained by us in preparing chitosan based microcapsules: for taste masking and improving the stability of a nutritional oil, the sustained release of drugs as well as chitosan superparamagnetic microcapsules for the immobilization of enzymes.

REFERENCES

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