

Microencapsulation of natural bioactives for food applications

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ABSTRACT

Currently, food industry is focused in avoiding potential harmfulness of synthetic food additives and in developing novel functional foods containing health promoting ingredients. In this context, natural matrices, which are recognized as rich sources of biologically active compounds, are viewed as viable substitutes. Nevertheless, the incorporation of bioactive compounds in foods, either to act as natural preservers or to impart functional properties, needs intermediate developments. Bioactive ingredients are generally prone to degradation, both during storage and food processing, and can interact with other food components resulting in their bioavailability weakening. Additionally, they can present unpleasant taste and odor.

Microencapsulation is a technique that allows bioactive compounds/extracts to be incorporated into a matrix or coating shell in the form of particles with diameters ranging from 1 to 1000 micrometers. These microparticles can release their contents along with time by means of different release mechanisms, which are dependent from the used encapsulation materials, production process, final morphology and application. Microcapsulation can thus provide a tool to protect natural extracts against the action of atmospheric agents such as light, moisture and heat, ensuring stability increase and bioavailability control. Moreover it can be used to provide a controlled release, including the delivery to the desired site after ingestion.

This work intends to give an overview of the cooperative and interdisciplinary work developed between BioChemCore (<http://esa.ipb.pt/biochemcore/>) and LSRE/IPB (<http://lsre.fe.up.pt/>) research groups, in the field of bioactives microencapsulation. Thus, microencapsulation of natural bioactives will be discussed by presenting a set of case studies focusing process development, incorporation into food matrices and bioactivity evaluation.

Acknowledgments: Financial support was provided by FCT and FEDER under Program COMPETE (Projects PEst-C/EQB/LA0020/2013 (LSRE) and Project PEst-OE/AGR/UI0690/2011 (CIMO)), QREN, ON2 and FEDER (Project NORTE-07-0124-FEDER-000014), and by PRODER (Project 46577- PlantLact).



01 de julio, 2014

CONARE-CENAT-LANOTEC-201-2014

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Sirva la presente para saludarle y a la vez indicarle que su trabajo:

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Han sido aceptado como **CONFERENCIA** para ser presentado en el **III Congreso Nacional de Nanotecnociencias 2014, III Congreso Nacional de Polímeros, XIV Taller de Desechos Agroindustriales y Marinos ADAM-14 y III Simposio Iberoamericano de Divulgación y Formación en Nanotecnología NANODYF 2014**, a realizarse en el Centro Nacional de Alta Tecnología en San José, Costa Rica, del 4 al 8 de agosto del año en curso.

Agradeciendo su atención a la presente, se despide



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