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I International Conference on Research for Sustainable Development in Mountain Regions

Book of Abstracts

INSTITUTO POLITÉCNICO DE BRAGANÇA

Centro de Investigação de Montanha

Embrapa

United Nations Educational, Scientific and Cultural Organization

UNESCO Chair in Sustainable Mountain Development

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Microencapsulation of bioactives: from nature to products

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In a general way, to potentiate marketable products based on natural bioactives, research should be oriented towards product development with possibilities for industrial applications by choosing appropriate technologies, processing conditions, materials and strategies. As so, to go from "nature to products" several steps need to be followed: (i) selection of viable plant sources; (ii) selection and application of appropriate extraction techniques; (iii) application of stabilization/encapsulation techniques; and (iv) proof of concept, preferably with real matrices. Even though the existing knowledge concerning the identification and characterization of natural sources of bioactives, application of these compounds into food/cosmetic matrices still present important challenges that urge to be solved. In fact, bioactive compounds are generally recognized as presenting problems of instability, either during storage and processing stages or upon application, which weakens their bioavailability and potential benefits. Moreover, 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, productive process, final morphology and application. Microencapsulation can thus provide a tool to protect natural bioactives 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 and target release. 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 techniques will be discussed by presenting a set of case studies focusing process development and product validation though incorporation of microencapsulated bioactives into food/cosmetic matrices.

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