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Confocal analysis of some microencapsulated bioactive compounds from vegetables

Abstract:

The current orientations in food intake have seen a transition towards a healthier diet, paving the way for the extraction and identification of new biologically active compounds, with beneficial functions, with synergistic, complementary, or even therapeutic actions, with a considerable focus on well-being and disease prevention. Obtaining and incorporating bioactive-enriched plant extracts into foods can significantly contribute to lowering the risk of specific diseases. Recently, modern biotechnological research provides a superior production of extracts of biologically active compounds, their microencapsulation or coacervation in various food-safe protein and biopolymer matrices that ensure their stability, extend their shelf life and even increase their absorption and bioavailability. The aim of the study was to investigate the morphology and stability of microcapsules of flavonoids and anthocyanins extracted from beetroot, tomatoes, onion, eggplant, black rice, black beans, courgette or pumpkin, obtained by various methods, in different matrices. Confocal analysis was performed by using a Carl Zeiss LSM 710 equipment connected with an Axio Observer Z1 inverted microscope with: diode, Ar, DPSS, and a HeNe-laser. The 3D images were rendered and classified analyzed by ZEN 2012 SP1 software (black edition). The encapsulation technique chosen for bioactive compounds from vegetables is very important because these types of molecules are very sensitive in different industrially obtained food matrices. Nowadays, to be able to protect these important compounds with novel coating and delivery systems, and to control the release profiles during digestion, represents quite a challenge with various applications in the field of functional foods.

Biography

Barbu Vasilica graduated in 1991 from the Faculty of Biology, University of Bucharest. Since 2003 she taught lectures in the Department of Food Science, Food Engineering and Applied Biotechnology at the Faculty of Food Science and Engineering. Associate Professor since 2009. Her professional research activity is oriented towards the microencapsulation of different biologically active compounds from plants and their confocal analysis to obtain functional foods with health benefits. The research work is defined by: 5 books, 88 papers, 14 research projects of which 4 as a manager, patents awarded with Silver Medal at the International Exhibition of Inventions in Geneva.