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PHYSICAL AND OXIDATIVE STABILITY EVALUATION OF WATER-IN-OIL EMULSIONS WITH EDIBLE/BIO DYES AS ANTIOXIDANTS

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In the last years, emphasis has been on for more and more edible/bio dye (derived from various sources: plants, insects and microorganisms). The use of these dyes in the food emulsions offers several advantages. In this study, the emulsions were prepared using sunflower oil, stabilised with SPAN 80 as lipophilic emulsifier consisting of sorbitan monooleate. After two months equilibration in the reservoir, the emulsions remain stable and there was no evidence of droplet aggregation or creaming into emulsions. Also, the physical stability of food emulsions was characterized using light scattering particle size analyzer. Furthermore, the immobilization of β -carotene and curcumin in these water-in-oil emulsions was realised. Thus, the aim of this study was to investigate the antioxidant potential of β -carotene and curcumin in these emulsions during the storage at ambient temperature. The antioxidant effects of β -carotene and curcumin on the emulsions peroxidation were by unsaturation index, peroxide value and TBA index assessed. The studies were achieved under forced reaction conditions at 60 °C with air bubbling in the sample test tube on water bath. This study has shown that stable vegetable water-in-oil emulsions (effective diameter: 197.14 nm) with edible dyes added to the oil phases can be prepared using a simple method that utilizes standard preparation procedures (homogenization and ultrasonication). On the other hand, the experimental results show that at a concentration of 0.175 w% curcumin significantly reduces the self oxidation process. Similar results were found for the emulsion coloured with 0.125 w% β -carotene. Tristimulus colorimetry (CIE XYZ and CIELAB colour space) has proved to be a useful tool for following the little change in the colour evolution of these emulsions. The final part of this study is dedicated to the future perspectives in the bio dyes emulsions field.

Biography

Romica Cretu has completed his PhD at the University of Bucharest, Physical Chemistry Department, Romania and Postdoctoral Studies at the "Dunarea de Jos" University of Galati, Faculty of Food Science and Engineering. In 2015, he became an Associate Professor at the Chemistry, Physics and Environment Department, Faculty of Sciences, "Dunarea de Jos" University of Galati. He has published three books as co-author, more than 20 original papers in reputed journals and has been serving as member of organizing committee at many conferences. He has nearly 15 years of experience in the research, focused in the area of Colloidal Systems, Edible Dyes and Biochemistry.

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