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Formulation and characterization of oregano microparticles prepared by spray-drying technology

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Oregano is an aromatic plant widespread in Mediterranean countries and it is rich in phenolic compounds with powerful antibacterial and antifungal properties. However, there are some difficulties for the storage of the flavor compounds due to the growth of microorganisms. Spray-drying technology provides several benefits to protect ingredients that are sensitive to light, oxygen and free radical degradation. The aim of this study was to prepare microparticles by using different concentration of wall materials(gum arabic and maltodextrin) and to select the best combination of matrix structure to be used as an encapsulating agent through analyses of the physicomechanical properties of the produced microparticles. The optimal conditions were maintained based on the yields of ursolic, rosmarinic acids and carvacrol. The experimental design of two – components system is conducted by using Design Expert. The resulting mixtures were homogenized in a magnetic stirrer, maintained at 25°C for 1 hour and subjected to spray drying. The ratio of wall material and oregano extract was 2:1, wall material concentration was 10%. The powders were obtained using Mini Spray Dryer and was used with vacuum of 6 mBar and aspiration 100%, the inlet temperature was 180°C and outlet temperature depended on the inlet temperature, feed flow rate was 30 mL/min. For determination of ursolic acid, rosmarinic acid and carvacrol were using UPLC analysis. The results showed that the wall material matrix concentration of maltodextrin 8.74% and gum arabic 1.26% were the optimized conditions for spray-drying oregano ethanolic extract when all significant response variables were compared using the desirability function.

Biography

Justė Baranauskaitė started her PhD in Biomedical Sciences at Lithuanian University of Health Sciences right after the graduation. She worked as a scientist in the analytical chemistry and toxicology ever since. She has published 1 paper in reputed journal and participated in many conferences.

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