CHARACTERIZATION OF AGAVE POWDER BY MEAN OF MORPHOMETRIC PARAMETERS

Miriam F. Fabela-Moron¹, Gustavo F. Gutiérrez López¹, Antonio R. Aparicio², Martha Lucia Ocampo², Liliana Alamilla Beltran¹


Introduction: Food products may present similar chemical composition and show different functionality depending on the microstructure developed during processing. In case of food powders obtained by spray drying, their microstructure can be evaluated by mean of different microscopy techniques and image analysis. Scanning electron microscope (SEM) is widely used method to qualify powder particle morphology. Image analysis has been applied to images of particles acquired by different microscopic techniques to obtain numerical data about morphology and microstructure of the analyzed system.

Objective: The aim of this work was to evaluate morphometric parameters of spray dried powders as microstructural characterization.

Methodology: The images of the powders were acquired through Scanning Electron Microscopy (SEM). Image analysis was performed using the Image J 1.43 ®. All the images were processed and analyzed to obtain the different morphometric parameters.

Results and discussions: The powders had particles with rough surfaces, values of form factor indicated tendency to circularity. The presence of cracks associated with fractal dimension values of 1.79 and 1.82, Contour with lacunarity of 0.22 and 0.18; and Fractal Dimension of Texture of 2.67 and 2.62, with lacunarity values of 0.28 and 0.32 indicating the degree of homogeneity of the material which can be related to flow and wetting properties of the material as well as to operational conditions of spray dryer.

Conclusions: It was possible differentiate products obtained at different processing conditions using morphometric parameters as characterization tool.