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Production of microparticles with multilayer obtained by ionic gelation associated electrostatic interaction

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The production of multilayer on the surface of alginate microparticles obtained by ionic gelation can improve the effect of protection and stability, overcoming the difficulties for applications such as enteric carrier of bioactive compounds, due to the high porosity of the matrix that allows rapid diffusion of the encapsulated material. The objective of this study was to evaluate the influence of the concentrations of polyelectrolyte in construction multilayer on the surface of particles. Particles were produced by alginate gelling ion and the technique layer by layer was applied for the construction of multilayeron the surface of the particles. The multilayer was prepared according to an experimental. Were selected as independent variables the concentration of alginate as anionic polyelectrolyte and whey proteins as a cationic component to be used as layers. The influence of the concentrations of the biopolymers on the multilayer construction in the particles was evaluated for protein adsorption in the third layer, variable response. The multilayer particles were characterized for moisture content, medium size and morphology. The content protein, total found in the multilayer was high, ranged from 51.20 to 64.91%, wherein 33.24% of the protein was found in the first layer, and values between 17.96 to 31.67% in the third layer. The moisture content of the particles of ionic gelation decreased significantly with the formation of multilayers on its surface, as opposed to the average size increased during this process. Observations made by SEM revealed that layers terminated alginate have smoother surfaces, while the present terminated whey proteins roughness.

Biography

G F Nogueirais a PhD student at the Faculty of Agricultural Engineering, State University of Campinas, completed Master's in Food and Nutrition from the Faculty of Food Engineering at the State University of Campinas and Degree in Nutrition.

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Starch/gelatin composites obtained by thermoplastic extrusion reinforced with natural fibers

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The purpose of food packaging is to protect foodstuffs from processing to the time of its use by the consumer. This includes protection against external factors such as chemical or biological contamination and distribution damage. The most used packaging materials that meet these criteria are polyethylene based materials, which have been in use by the food industry for over 50 years because they are safe, inexpensive, versatile and flexible. However, packaging technology should balance food protection with other issues, including energy and material costs and also take in consideration that food packaging must be removed in an environmentally responsible manner. Considering this, the main purpose of this work was to develop and characterize environmental friendly materials based on starch and gelatin containing coconut fiber as reinforcement. The composites were obtained by thermoplastic extrusion and injection molding. The morphology of the materials was assessed by scanning electron microscopy and the crystalline structure through XRD patterns.It was possible to observe well defined crystalline peaks in the regions of 2θ (20°) for all formulations. When 20% gelatin is added to the sample, two intense peaks are also observed in the region of 2θ (approximately 38 to 44). The results indicate some crystallinity in the material. By analysis of scanning electron microscopy it can be observed a more homogeneous (less rough) surface in the samples containing 10% gelatin, it may be possible that only one passage of the pellet extruder has not been sufficient to evenly distribute a larger amount of gelatin.

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