

Effect of Homogenization Pressures and Soybean Oil Content on Physicochemical Characteristics of Alginate-Based Coating-Forming Nanoemulsions

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In recent times, the benefits of edible coatings have been studied to maintain quality and prolong the post-harvest life of fresh fruits and vegetables. Its use is due to its ability to waterproof the fresh product by decreasing its moisture loss, regulating the oxygen uptake, and consequently, reducing its respiration, retarding ethylene biosynthesis and decelerating the oxidative reactions. The effects of soybean oil content and homogenization pressures on the physicochemical properties of alginate-based coating-forming nanoemulsions were evaluated. Coating-forming emulsions were developed based on alginate (1.0% w/v) and soybean oil (0.5%, 1.0% and 1.5% v/v) and using three homogenization pressures (50MPa, 100MPa and 200MPa). Emulsions were characterized in terms of droplet size, polydispersity index, ζ -potential, rheological behavior, and surface tension. Wettability was evaluated on the cherry tomato epicarp by measuring the critical surface tension and contact angle. Emulsions with smaller droplet size, lower polydispersity index, and higher ζ -potential were improved by increasing the homogenization pressures. Emulsions viscosity decreased when the homogenization pressures were increased for all soybean oil contents. Emulsion wettability improved with soybean oil content and by increasing the homogenization pressures. Incorporating soybean oil and using 200MPa of homogenization pressure produced emulsions with better functional properties, which could be used as a coating for fruit and vegetable products.

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Biography:

Camilo Gutiérrez-Jara is a food engineer (Universidad del Bío-bío, Chillán, Chile, 2013). Actually, he is a candidate to food engineering doctor (Universidad del Bío-bío, Chillán, Chile, 2015). In this doctorate, his thesis is "**Application of phytohormones and emulsified coatings to improve cracking tolerance of sweet cherry fruits**". The first thesis approach considers the application of phytohormones abscisic acid and methyl jasmonate (together and separately) in sweet cherry fruits. The second approach focus in the application of nano-emulsified edible coating alginate-based and soybean oil, in sweet cherry fruits. He is currently beginning to develop the second approach with the Dr. Ricardo Villalobos-Carvajal direction.