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MICROENCAPSULATION OF GALLIC ACID ON NOPAL MUCILAGE (*OPUNTIA FICUS INDICA*) BY SPRAY DRYING

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Spray-drying process has been used to encapsulate food ingredients such as antioxidants, flavors, lipids, and carotenoids. The objective of this work was to produce microcapsules with gallic acid, a phenolic compound that acts as antioxidant,by spray drying with mucilage extract aqueous fromnopal (*Opuntiaficusindica*) as encapsulating agent, in wet basis and dry basis, and to characterize the rheology response (apparent viscosity, storage G' and loss G" moduli) and particle size distribution of encapsulated reconstituted solutions at concentration 6% (w/v). Steady-shear viscosities in a range of shear rate from 1 to 300 s^{-1}were measured at different temperatures ranges from 25 to 45 °C. The drying parameters studied to process in wet basis were inlet air temperature (130 and 170 °C) and speed atomization (14,000 and 20,000 rmp); whereas for process in dry basis the drying parameters 130 °C and 14,000 rpm were used. The analysis showed that gallic acid microcapsules has a bimodal particle size distribution, mean particle size of 3 to 4.1 μm. The rehydrated biopolymer showed a non-Newtonian pseudoplastic (shear thinning) behavior, the viscosity decreased with the content ofgallic acid in wet basis.Cross model was found to be the most appropriate (r^2> 0.95) to fit the flow curves of encapsulated reconstituted solutions. It was found that the values from "m" varied between 0.55 and 0.85 and for "k" between 0.0071 y 0.021 s. The viscosity–temperature dependence can be represented by Arrhenius equation, the activation energy increased with the addition of active compound, in wet basis. The mechanical spectra showed that the sample with gallic acid a larges times is stable in the dry basis process. This study demonstrated the effectiveness of the biopolymer of *Ofi*used as wall biomaterial in microencapsulation ofantioxidants by spray drying process.