

Pectin-based active edible coatings applied in papaya: rheological and surface properties

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Edible coatings based on natural products have proven to be a sustainable and low-cost alternative for increasing the shelf life of fruits. From this perspective, the objectives of this work were the development and characterization of pectin-based edible coatings (4g/100g solution), incorporated with oil-in-water emulsion containing orange essential oil (0.6%) as an active ingredient, in addition to its application in papaya. For the formulation considered control there was no incorporation of the emulsion. The coating forming solutions were characterized in terms of their rheological properties at 40°C (steady and oscillatory shear tests) and surface properties (contact angle, surface tension and wettability). The coating forming solutions were applied to the fruit surface by two different methods: immersion and aspersion. The rheological behavior of both control and emulsified active solution were similar, among the most known mathematical models to describe the rheological behavior of a fluid, the Newtonian achieved better fits, with quadratic ratios above 0.9967 for both formulations tested, despite a decrease of approximately 26% of viscosity with oil addition. In frequency sweep analysis, performed within linear viscoelasticity range, samples exhibited $G' < G''$, 100= 17.27= 38.87= a= acting= allied= allowing= along= an= and= angle= application= as= be= below= between= both= c= characterizing= coating= compared= contact= contrary= control= critical= demonstrated= developing= differences= dispersed= div= dominant= drop= easy-to-apply= edible= emulsified= emulsionated= entanglements= estimate= for= formulation= from= fruit.= gel-sol= happened= in= increase= indicating= interactions= interval= it= less= limits= methods= mn= network.= no= of= on= papaya= peel= peel.= pendant= plot= polar= possibility= possible= prominent= proved= ranging= respectively.= since= sol= sol-gel= solution= solution.= solutions= study= substantial= superposition= surface= temperature= tension= tensions= the= there= this= to= transition= two= uniform= use= value= was= well= were= wettability= what= whose= with= without= zisman="> </g,>