



II EPNAT

Encontro de Polímeros Naturais

Meeting on Natural Polymers

21 a 23 de outubro de 2020.

Organização:



The 2nd Meeting on Natural Polymers – EPNAT brought together entrepreneurs, undergrad and graduate students, postdocs, and professors to discuss emerging research challenges and strategies for different applications of natural polymers. The II EPNAT was chaired by scholars from leading universities in Brazil: University of Araraquara (UNIARA), University of São Paulo USP–FZEA, Pirassununga, University of Campinas (UNICAMP), São Paulo State University (UNESP, Araraquara & Ilha Solteira campuses), Federal University of São Paulo (UNIFESP, Diadema campus), and Federal University of Piauí (UFPI).

The event took place virtually in 2020, gathering 1013 participants, 173 abstracts submitted and a strong international engagement, as the lectures given by top-notch speakers, which can you watch on-demand at <https://www.youtube.com/watch?v=P5ylh2UrZpQ&t=4673s>.



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21 a 23 de novembro de 2020.

Organização:



FORMULATION OF CHITOSAN/GELATIN/PEQUI OIL EMULSIONS: THERMAL, RHEOLOGICAL AND ANTIMICROBIAL PROPERTIES

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Area: (X) Food and Agriculture () Medical and Pharmaceutical () Multifunctional Applications

The shelf-life of foods is affected by several aspects, mainly chemical and microbial events, resulting in a considerable decline in consumer's acceptance. There is an increasing interest to substitute synthetic preservatives by bioactive compounds without the use of complex chemical synthesis and toxic materials. However, this replacement is a challenge due to their low chemical stability, off-flavor, low solubility, and short-term effectiveness. Natural emulsions stabilized by chitosan/gelatin gel (CG) could overcome these limitations. In this study, chitosan/gelatin/pequi oil emulsions (CGPO) were developed in different oil concentrations. The samples were characterized according to their thermal stability by thermogravimetry, and the lowest levels of water absorbed in the emulsions containing pequi oil were an indicative of its interaction with the polymeric network. Rheological deformation tests of the emulsions determined their linear viscoelastic region (LVR). All emulsions were more elastic than viscous ($G' > G''$) and the increase of pequi oil concentration enhanced their elastic behavior. G' and G'' moduli were also studied as a function of temperature, and the presence of pequi oil in higher concentrations led to lower gelation temperatures. Flow tests indicated that all the samples showed pseudoplastic behavior and the addition of pequi oil increased their viscosity. Finally, minimum inhibitory concentration (MIC) and minimum bactericidal concentration (MBC) were performed against *Staphylococcus aureus* and *Salmonella enterica* Enteritidis. CG gel inhibited the bacteria growth, showing MIC and MBC values of 31.2 for *S. aureus* and 62.5 $\mu\text{g mL}^{-1}$ for *S. Enteritidis*. Pequi oil was not able to inhibit the bacteria at the tested concentrations. However, antimicrobial activity of CGPO emulsions against *S. aureus* surpassed that of chitosan/gelatin gel, suggesting synergism. These results offer a strategy for the development and application of emulsions containing natural compounds, allowing the conduction of new tests that disclosure their potential action as food coatings.

Keywords: Emulsions; Antimicrobial Activity; Food Coating.