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www.elsevier.com/locate/sdj

PII: S2212-4292(16)30049-9
DOI: http://dx.doi.org/10.1016/j.fbio.2016.07.003
Reference: FBIO165

To appear in: *Food Bioscience*

Received date: 14 January 2016
Revised date: 12 July 2016
Accepted date: 12 July 2016

Cite this article as: Jeannine Bonilla and Paulo J.A. Sobral, Investigation of th physicochemical, antimicrobial and antioxidant properties of gelatin-chitosa edible film mixed with plant ethanolic extracts, *Food Bioscience* http://dx.doi.org/10.1016/j.fbio.2016.07.003

Investigation of the physicochemical, antimicrobial and antioxidant properties of gelatin-chitosan edible film mixed with plant ethanolic extracts☆

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Abstract

Gelatin and chitosan are edible polymers, which may be used in combination with antimicrobial/antioxidant extracts as thin coatings to extend shelf life of foods. The effect of cinnamon, guarana, rosemary and boldo-do-chile ethanolic extracts and different ratios of gelatin:chitosan on the optical, microstructural, mechanical and barrier properties of the films was investigated, as well as the antimicrobial and antioxidant activity. Both polymers were blended homogeneously in the film matrix as confirmed by the microstructural and FTIR studies. Increments in chitosan proportion increased the elasticity of the films and provided a reduction in the water vapor permeability, which was not significantly reduced with the addition of the extracts. The blends films presented good antioxidants properties in TEAC test and an excellent growth inhibition against *E. coli* and *S. aureus*, suggesting that these films based on blends of gelatin and chitosan and additivated with ethanolic extracts could provide an alternative as active packaging material for food applications.

Keywords: gelatin, chitosan, plant extracts, antioxidant film, antimicrobial film.

1. Introduction

Edible coatings have recently gained more interest for food preservation due to the promising results obtained, mainly improving the quality of food products through

☆ **Gelatin-chitosan edible film additivated with ethanolic extracts.**

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