A381 - PHYSICAL AND TRANSPORT PROPERTIES OF EDIBLE FILMS COMPOSED OF GALACTOMANNAN AND CHITOSAN

BARTOLOMEU W.S SOUZA1; LORENA DE SOUSA ALMEIDA1; MAYRA HORÁCIO ARAÚJO1; NATÁLIA SILVA DUTRA1; DIEGO ALVES DO VALE1; MIGUEL ANGELO CERQUEIRA2; BRUNO DANIEL FERNANDES2; ANTONIO VICENTE2; ANDRÉ LUIS COELHO DA SILVA1

1.UNIVERSIDADE FEDERAL DO CEARÁ, FORTALEZA, CE, BRASIL; 2.UNIVERSIDADE DO MINHO, BRAGA, PORTUGAL.

Abstract:

Edible films and coatings can provide additional protection for food, while being a fully biodegradable, environmentally friendly packaging system. The main objective of the study was to produce edible films and coatings based on chitosan and galactomannan of A. pavonina L., with the incorporation of sodium acetate and characterize them as to their physical properties. Films were cast and, the water vapor, O₂ and CO₂ permeabilities of the films were determined, together with their solubility in water, opacity, color and mechanical properties. The film of chitosan-galactomannan with the addition of sodium acetate had lower permeability to water vapor (1.40 ± 0.02 (g.(m.day.atm)-1)) and elongation at break (67.11 ± 0.89%) being the most rigid film for presenting the highest Young’s modulus (35.68 ± 0.64 MPa). The blends showed the highest values of maximum voltage and breakdown voltage. The films based on galactomannan had a decreased permeability to O₂ of 0.20 to 0.18 x 10-12 (g.(m.Pa.s.m²)-1, incorporating sodium acetate, also showing high permeability to CO₂. The chitosan film without addition of sodium acetate had low lightness value L * (81.23 ± 1.43) and a higher opacity compared with
the film containing acetate, suggesting that incorporation of sodium acetate increased transparency of the film. The films containing chitosan exhibited low water solubility and high $b^*$ component values, indicating the predominance of yellowing. The reported results is important once it will reduce the characterization work needed in subsequent applications of these coatings/films on foods.
Biotechnology for the Development of a Green Economy

IBS 2014
Copyright © 2016
All rights reserved to authors

Editorial Coordination
José Osvaldo Beserra Carioca
Rafael Dias Bezerra

Secretary
Elke Montenegro

Reviser
Lúcia M. Martins do Vale Carioca
Rafael Dias Bezerra

Graphic design and publishing
Eduardo Freire

Printed version
Expressão Gráfica Editora

ISBN
978-85-420-0788-6

Biotechnology for the Development of a Green Economy