conferenceseries.com

2nd International Conference on

Food & Beverage Packaging

June 13-14, 2016 Rome, Italy

Antimicrobial films based on polyvinyl alcohol and hydroxypropyl-β-cyclodextrin for the prolonged release of sodium benzoate for potential food packaging application

Stephanie Degoutin, Cecile Birck, Valerie Gaucher and Maryse Bacquet University of Lille, France

Our work concerns new poly(vinyl alcohol) (PVOH) cast films crosslinked with citric acid (CTR) and hydroxypropyl- β -cyclodextrin (HP β CD) and loaded with sodium benzoate (NaBz) as preservative agent, with different compositions of CTR, NaBz and HP β CD. The influence of HP β CD and processing parameters such as the crosslinking time on the physico-chemical and antimicrobial properties of the films were discussed. Permeability tests demonstrate that the presence of CTR and HP β CD does not modify PVOH barrier properties. Raman spectroscopy cartography shows that the NaBz distribution in the films is homogeneous, especially with HP β CD. The NaBz release in water is prolonged with HP β CD on one hand for high crosslinking times and, on the second hand, in the assays carried out at low temperature (4°C). The released quantity is increased from 40% to 70% when NaBz is included into HP β CD cavity. Antimicrobial assays were performed against *S. aureus, E. coli, Candida albicans* and *Aspergillus niger*. Without HP β CD, all films present a contact antimicrobial activity thanks to grafted CTR and the best diffusion activity was obtained for 6 wt% NaBz for the four microorganisms. With HP β CD, the antimicrobial activity by diffusion was increased with crosslinking times. These results demonstrate the high potential of PVOH/CTR/HP β CD cast films as antimicrobial food packagings.

Biography

Stephanie Degoutin has completed her PhD in 2007 from University of Lille and Post-doctoral studies from Institute of Polymer Science and Technology of Madrid. She is working as an Assistant Professor in the group Polymer Systems Engineering of Unité des Matériaux et Transformations at the University of Lille, France. She has published 20 papers in peer-reviewed journals mainly focused on drug release.

stephanie.degoutin@univ-lille1.fr

Notes: