

Preparation and Characterization of Cellulose Based Antimicrobial Food Packaging Materials

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Abstract : This study aimed to develop polyelectrolyte structured antimicrobial food packaging materials that do not contain any antimicrobial agents. Cationic hydroxyethyl cellulose was synthesized and characterized by Fourier Transform Infrared, carbon and proton Nuclear Magnetic Resonance spectroscopy. Its nitrogen content was determined by the Kjeldahl method. Polyelectrolyte structured antimicrobial food packaging materials were prepared using hydroxyethyl cellulose, cationic hydroxyethyl cellulose, and sodium alginate. Antimicrobial activity of materials was defined by inhibition zone method (disc diffusion method). Thermal stability of samples was evaluated by thermal gravimetric analysis and differential scanning calorimetry. Surface morphology of samples was investigated by scanning electron microscope. The obtained results prove that produced food packaging materials have good thermal and antimicrobial properties, and they can be used as food packaging material in many industries.

Keywords : antimicrobial food packaging, cationic hydroxyethyl cellulose, polyelectrolyte, sodium alginate

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