Abstract

Chemical polymers are the most common materials used in the packaging industry. However, many concerns regarding the transfer of chemical molecules released into the food and environmental problems created. For this purpose, two bacteria include *Lactobacillus casei* PTCC 1608 and *Lactobacillus rhamnosus* PTCC 1637 were added directly to methyl cellulose and sodium caseinate solution. So that the final concentration of bacteria in prepared films was reached about 10^6Cfu /cm^2.Then, the films were dried for 48 h at 25C°. The effect of lactic acid bacteria on film properties, including water vapor permeability, density, mechanical strength, solubility and moisture was investigated. Also, the ability of lactic acid bacteria survival during 30 days of storage, and inhibitory effect on the bacteria *Listeria innocua* IBRC-M 10799 and *Pseudomonas aeruginosa* PTCC 10832 films during 12 days of storage at 5C° was investigated. The results showed that lactic acid bacteria changes the films characteristics. So that films containing lactic acid bacteria compared to no bacteria film samples were clearer, brighter and more permeability, but lower tensile strength and modulus of elasticity showed ($p<0.05$). Films containing Lactobacillus at 5C° for 8 days inhibition rate *Listeria innocua* IBRC-M 10799 and *Pseudomonas aeruginosa* PTCC 10832 respectively 65 and 55 percent displayed. In the film sodium caseinate containing *Lactobacillus casei* PTCC 1608 showed a greater impact ($p<0.05$). Sodium caseinate film viability of the Lactobacillus was higher than methylcellulose film. So the best result for films sodium caseinate containing *Lactobacillus casei* PTCC 1608 was obtained sodium caseinate without a significant change in the properties of the film ($p>0.05$). The survival rate of *Lactobacillus casei* PTCC 1608 (97%) and inhibiting pathogenic bacteria (80%) showed high ($p<0.05$).

Keywords: sodium caseinate film, methyl cellulose film, *Lactobacillus casei*, *Lactobacillus rhamnosus*

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The Thesis Submitted for the Degree of M.Sc (Food Science and Technology)

Preparation of microbial edible film with anti-spoilage property

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September 2016