

Abstract

Edible films can be a good alternative to packaging derived from oil derivatives due to their environmental compatibility. Today, consumers' concerns about the toxicity of artificial preservatives in the food industry have led to the search for natural antioxidants and antimicrobials. Ready-to-eat foods such as kebabs are known as the most nutritious food for the growth of microbes and the most common foods that cause food poisoning. The purpose of this study was to investigate the effect of an antimicrobial film of caseinates- cellulose nanocrystal containing supernatant and *Lactobacillus reuteri* (PTCC 1655) on microbial and chemical properties of kebab. For this purpose, a sodium caseinate- Cellulose nanocrystal was prepared by adding *Lactobacillus reuteri* PTCC 1655 to 10^6 CFU/cm² and supernatant, and on the films prepared by mechanical properties assessment, water vapor permeability, solubility and moisture, the ability to survive the *Lactobacillus reuteri* bacteria during 30 Day in the film, as well as the effects of The film's inhibitory effect on *Salmonella enterica* PTCC 1709 and *Staphylococcus aureus* PTCC 1189 in 12 days at 5 ° C. The films were wrapped on kebab and each and every four days were sampled and microbial tests (Total Viable Count, Psychrophile bacteria and mold and yeast count), chemical (pH values, acidity, thiobarbituric acid and Total volatile basic nitrogen, Peroxide index). Among the treatments, the caseinat sodium-nanocellulose film containing *Lactobacillus reuteri* was the most effective treatment for increasing the shelf life of the kebab sample. Therefore, it is suggested that the caseinat sodium-nanocellulose film containing *Lactobacillus reuteri* should be used to increase the shelf life of kebab.

Keywords: lactic acid bacteria, edible film, biodegradable, antibacterial.



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The effect of anti bacterial edible film of sodium caseinate /cellulose nanocrystal, including of Lactobacillus reuteri PTCC1655 cells and supernatant on quantitative and qualitative characteristics of Kebab.

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