

Antibacterial and Physical Properties of Composite Edible Film Containing Modified Lysozyme and Sodium Cyanoborohydrate

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Abstract: The aim of this research were to find out the effect of sodium cyanoborohydrate addition on the release of modified lysozyme from composite edible film based on whey protein and porang flour. The research was the addition of sodium cyanoborohydrate on modified lysozyme aqueous (control ; 0.005%; 0.007% and 0.009%) using randomized block design, the variables were, the release of modified lysozyme, antibacterial of modified lysozyme on *Latobacillus bulgaricus* and *Escherichia coli*, water vapor permeability, protein solubility and microstructure of composite edible film. The results were the treatment didn't gave significantly effect ($P > 0.05$) on release of modified lysozyme, antibacterial of modified lysozyme, water vapor permeability, protein solubility and microstructure of composite edible film. Increasing sodium cyanoborohydrate produced decreasing the release of modified lysozyme from composite edible film, however, the treatment produce stable antibacterial activity, water vapour permeability and protein solubility of composite edible film containing modified lysozyme and sodium cyanoborohydrate. Formation of more dense structure with increased sodium cyanoborohydrate content. It concluded that Sodium cyanoborohydrate contributed to controlled release rates of modified lysozyme from composite edible film by reducing film porosity. The film showed antimicrobial activity against *Latobacillus bulgaricus* and *Escherichia coli*.

Keywords: release, antibacterial activity, composite edible film, modified lysozyme, sodium cyanoborohydrate.