Physical Barrier, and Antimicrobial Properties of Edible Coating Made From Chitosan Enriched With Galangan Extract

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Abstract

Background - Chitosan is a fundamental chemical used to make edible coatings. Chitosan has been shown to increase plant tolerance to pathogen infections. Galangal (Alpinia galanga) includes flavonoids, phenols, tannins, and essential oils that have antibacterial properties. Pharmacological activities reported include antibacterial, antifungal, antiviral, antiprotozoal, immunomodulatory, antioxidant, antidiabetic, and hypolipidemic. The purpose of this study is to examine the physical, mechanical, and barrier properties of edible coatings created using chitosan and galangal extract as coating materials to prevent post-harvest illness. The edible coating solution parameters studied included antibacterial activity, particle size analysis (PSA), water vapor transmission rate (WVTR), water solubility, contact angle, and film surface appearance. The findings revealed that the water vapor transmission rate in the chitosan film and galangal extract decreased as the concentration of chitosan and galangal extract increased. The microbial activity test findings revealed that chitosan and galangal extract were still relatively low in concentration, measuring less than 6 mm. Higher quantities of chitosan and galangal extract result in larger particles being carved. The findings of the examination of the solubility of edible film based on the treatment of chitosan concentration and galangal extract revealed that the greater the concentration of chitosan and galangal extract, the lower the solubility level.

Purpose - The Purpose of This study is to eximine the pgysical, mechanical, and barrier properties of edible coating created using chitosan and galangal extract as coating materials to prevent postharvest illness

methodology - Edible coating solution made from chitosan and galangal extract. Using chitosan concetration is 0.5%, 1%, 1.5% and 2%, while galangal extract use 1%, 2% and 3% concetration. After that, the parameters observed antibacterial activity, PSA, WVTR, water solubility, contact angel and SEM.

Findings - The finding of the examination of the solubility of the edible film basedon the tratment of chitosan consentration and galangal extract, the lower the solubility level

Originality - This research use galangal extract as antimicrobial to prevent postharvest illness

Keywords: edible coating, physical and mechanical properties, chitosan, galangal extract