

**PEMBUATAN *EDIBLE* FILM KITOSAN/POLIETILEN GLIKOL
SEBAGAI PEMBUNGKUS BUAH AGAR TERHINDAR DARI
LALAT BUAH HAMA *Bactrocera carambolae***

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INTISARI

Dalam rangka mengetahui potensi *edible* film kitosan/polietilen glikol (PEG) sebagai pembungkus buah agar terindar dari peletakan telur lalat buah hama *B. carambolae* telah dilakukan kajian pengaruh rasio berat kitosan/PEG dan konsentrasi larutan kitosan/PEG terhadap sifat mekanik film. Campuran kitosan dan PEG dibuat dengan variasi rasio berat kitosan/PEG 1,0/0,0; 0,8/0,2; dan 0,7/0,3. Larutan kitosan/PEG dalam asam asetat 1,0% v/v dibuat dari campuran kitosan/PEG tersebut dengan variasi konsentrasi 0,5; 1,0; 1,5; dan 2,0% b/v. Film kitosan/PEG dibuat dengan mengeringkan larutan kitosan/PEG dalam cawan petri pada temperatur 60 °C selama ± 12 jam. Sifat mekanik film kitosan/PEG diuji menggunakan *Universal Testing Machine* (UTM). Karakterisasi gugus fungsi dan permukaan film kitosan/PEG dilakukan dengan *Fourier Transform Infra Red* (FTIR) dan *Scanning Electron Microscopy* (SEM). Sampel buah jambu biji merah (*Psidium guajava* L.) digunakan untuk uji potensi film kitosan/PEG sebagai penolak peletakan telur (*Insect Ovipositing Repellent*/IOR) terhadap lalat buah hama *B. carambolae*. Hasil penelitian menunjukkan bahwa rasio berat kitosan/PEG berpengaruh terhadap sifat mekanik film kitosan/PEG. Sifat mekanik yang terbaik yaitu kuat tarik rendah dan persen perpanjangan tertinggi diperoleh pada film kitosan/PEG dengan rasio berat 0,7/0,3 dengan konsentrasi larutan kitosan/PEG 1,5%. Berdasarkan nilai OAI (*Oviposition Activity Index*) film kitosan/PEG rasio berat 1,0/0,0; 0,8/0,2; dan 0,7/0,3 berpotensi sebagai IOR terhadap lalat buah *B. carambolae*.

Kata kunci: *B. carambolae*, *edible* film kitosan, *Insect Ovipositing Repellent*, PEG

PREPARATION OF CHITOSAN/POLYETHYLENE GLYCOL EDIBLE FILM AND ITS POTENTIAL ASSAY AS AN INSECT OVIPOSITING REPELLENT AGAINST *Bactrocera carambolae* FRUIT FLY

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ABSTRACT

In order to know the potency of chitosan/polyethylene glycol (PEG) edible film as Insect Ovipositing Repellent (IOR) againsts *B. carambolae* fruit fly has been conducted to know the effect of chitosan/PEG weight ratio and concentration of chitosan/PEG solution on mechanical properties of film. Chitosan and PEG mixture was made by weight ratio variation of chitosan/PEG. Chitosan/PEG solution in 1.0% v/v acetic acid was prepared from chitosan/PEG mixture at variation of concentration: 0.5; 1.0; 1.5; and 2.0% w/v. Chitosan/PEG film was prepared by drying chitosan/PEG solution in petri dish at 60 °C for ±12 h. The mechanical properties of chitosan/PEG films were tested using Universal Testing Machine (UTM). Characterization of functional groups and morphology of chitosan film/PEG were conducted by Fourier Transform Infra Red (FTIR) and Scanning Electron Microscopy (SEM). Guava as sample (*Psidium guajava* L.) was used for testing the potential of chitosan/PEG film as IOR againsts the *B. carambolae* fruit fly. The results showed that weight ratio of chitosan/PEG giving effect on mechanical properties of chitosan/PEG film. The best of mechanical properties with low tensile strength and the highest elongation were obtained from 0.7/0.3 weight ratio of chitosan/PEG film with 1.5% concentration. Based on OAI (*Oviposition Activity Index*) value showed that chitosan/PEG film ratio 1.0/0.0; 0.8/0.2 had potential as IOR against *B. carambolae* fruit fly.

Keywords: *B. carambolae*, edible film chitosan, Insect Ovipositing Repellent, PEG