ABSTRACT

THE EFFECT OF GLICEROL AND CMC CONCENTRATION ON CHARACTERISTIC OF " PISANG RAJA" WASTE *(Musa sapientum.)* BIODEGRADABLE FILM

by

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"Pisang Raja" waste contains cellulose can be used raw material of biodegradable films. The purpose of this research were to know the effect of glycerol and CMC concentration on the biodegradable films characteristic of "Pisang Raja" waste and to know the best combination. The research was arranged by RAKL with three replications. This study used two factors, the first factor was three levels of glycerol concentration: 0,5%, 1% and 1,5%. The second factor was three levels of CMC concentration: 1%, 2%, and 3%. "Pisang Raja" waste were smoothed and centrifuged then the pure of "pisang raja" waste were immersed with NaOH 2,5% and hydrolized using H_2O_2 2%. It was then mixed with various concentration of ingredients. The data of tensile strength test and the thickness test were analyzed by analysis of variance to get the error variance by using ANOVA and further tested with LSD at 5%. The homogenity was analyzed by using Bartlett test and additivity data was analyzed by using Tuckey test. While the data for biodegradability test was showed by visual sight and analyzed descriptively. The result of this study showed that the concentration of glicerol and CMC had no

interaction and had significant affect on tensile strength biodegradable films but not on thickness of the biodegradable films. The best results were obtained on 0.5% glycerol and 3% CMC concentration having the tensile strength values of 45,057 GPa and thickness of 0,160 mm. The biodegradable film had been composed on 19 days by biodegradability test.

Keyword : *Biodegradable film*, "pisang raja" waste cellulose, glicerol, CMC

ABSTRAK

PENGARUH KONSENTRASI GLISEROL DAN CMC TERHADAP KARAKTERISTIK *BIODEGRADABLE FILM* DARI KULIT LIMBAH PISANG RAJA *(Musa sapientum.)*

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Kulit pisang raja mengandung selulosa yang dapat dijadikan bahan baku dalam pembuatan *biodegradable film* Penelitian bertujuan mengetahui pengaruh gliserol dan CMC terhadap karakteristik *biodegdable film* dari kulit pisang raja dan mengetahui kombinasi terbaik, penelitian ini disusun dalam. Rancangan Acak Kelompok Lengkap (RAKL) dengan tiga kali ulangan. Penelitian ini menggunakan 2 faktor, faktor pertama konsentrasi gliserol 0,5%,1%, dan 1,5%. Faktor kedua konsentrasi CMC 1%, 2%, dan 3%. Kulit pisang raja di haluskan dan disentrifus kemudian dilakukan perendaman dengan NaOH 2,5% dan dihidrolisis menggunakan H_2O_2 2%, setelah itu dilakukan pencampuran bahan sesuai dengan konsentrasi yang ditentukan. Data hasil uji kuat tarik dan uji ketebalan diolah dengan analisis sidik ragam kemudian diolah lebih lanjut dengan uji BNT pada taraf 5% Kesamaan ragam data diuji dengan *uji Bartlett* dan kemenambahan data diuji dengan uji *Tuckey*. Sedangkan data untuk pengujian biodegradabilitas disajikan dengan penampakan visual dan dibahas secara deskriptif. Hasil penelitian menunjukkan bahwa konsentrasi gliserol dan CMC

tidak ada interaksi tetapi berpengaruh nyata terhadap kuat tarik *biodegradable film* tetapi tidak berpengaruh nyata pada ketebalan *biodegradable film*. Hasil terbaik diperoleh pada konsentrasi gliserol 0,5% dan CMC 3% yang menghasilkan nilai kuat tarik 45,057 GPa dan ketebalan sebesar 0,160 mm. *Biodegradable film* terurai selama 19 hari dengan uji biodegradabilitas.

Kata kunci : *Biodegradable film*, selulosa limbah kulit pisang raja, gliserol, CMC