

ABSTRAK

KARAKTERISTIK FISIK BIODEGRADABLE FILM BERBASIS SELULOSA AMPAS BONGGOL NANAS DENGAN PENAMBAHAN LIGNIN AMPAS TANDAN KOSONG KELAPA SAWIT

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Penelitian ini bertujuan untuk mengetahui pengaruh penambahan lignin ampas tandan kosong kelapa sawit terhadap karakteristik fisik biodegradable film berbasis selulosa dari ampas bonggol nanas. Penelitian ini disusun dalam rancangan kuadruplo dengan variasi konsentrasi lignin sebesar 0%, 2,5%, 5%, 7,5%, dan 10%. Parameter yang diamati adalah pengamatan visual, kuat tarik, persen pemanjangan, ketebalan, densitas, daya serap air, ketahanan suhu ruang dan biodegradabilitas. Hasil penelitian menunjukkan bahwa penambahan lignin secara signifikan memengaruhi karakteristik fisik film. Penambahan lignin terbaik terdapat pada formulasi L2 (lignin 5%) yang memiliki nilai kuat tarik (20,27 MPa), persen pemanjangan (15,29%), ketebalan (0,29 mm), densitas ($1,16 \text{ g/cm}^3$) dan daya serap air (6,28%). Hasil pengamatan ketahanan terhadap suhu ruang yang stabil dan degradasi yang sempurna dalam waktu satu minggu. Hasil pengamatan secara visual menunjukkan bahwa semakin tinggi konsentrasi lignin, maka warna biodegradable film semakin gelap dan tekstur semakin kasar hal ini diakibatkan adanya agregasi lignin.

Kata kunci: biodegradable film, selulosa, lignin, ampas bonggol nanas, ampas tandan kosong kelapa sawit

ABSTRACT

PHYSICAL CHARACTERISTICS OF BIODEGRADABLE FILM BASED ON CELLULOSE FROM PINEAPPLE PULP WITH THE ADDITION OF LIGNIN FROM PALM EMPTY FRUIT BUNCHES

By

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This study aims to determine the effect of lignin addition from palm empty fruit bunches on the physical characteristics of cellulose-based biodegradable film from pineapple pulp. This study was arranged in a quadruplicate design with variations in lignin concentration of 0%, 2.5%, 5%, 7.5%, and 10%. The parameters observed were visual observation, tensile strength, percent elongation, thickness, density, water absorption, room temperature resistance and biodegradability. The results showed that the addition of lignin significantly affected the physical characteristics of the film. The best lignin addition was found in formulation L2 (5% lignin) which had tensile strength (20.27 MPa), percent elongation (15.29%), thickness (0.29 mm), density (1.16 g/cm³) and water absorption (6.28%). The observation results were stable room temperature resistance and complete degradation within one week. Visual observation showed that the higher the lignin concentration, the darker the color of the biodegradable film and the coarser the texture due to lignin aggregation.

Keywords: *biodegradable film, cellulose, lignin, pineapple pulp, oil palm empty fruit bunch pulp*