

ABSTRACT

THE EFFECT OF PASSING THE PANDAN LEAF CELLULOSE (*Pandanus amaryllifolius Roxb.*) FLOUR MESH AND THE ADDITION OF TAPIOCA ON THE BIODEGRADABLE FILM CHARACTERISTICS

By

SAFIRA NUR ANISA

Biodegradable film is an environmentally friendly packaging material that is easily decomposed completely by microorganisms in the soil and can be made from natural resources such as pandan leaves which contain cellulose ranging from 30-35%. This study aims to determine the effect of passing the mesh of pandan leaf cellulose flour and the addition of tapioca on the characteristics of the biodegradable film produced, as well as to determine the effect of the interaction between the concentration of tapioca and the variation of the sieve size of pandan leaf cellulose flour to produce biodegradable film characteristics from pandan leaves. This study was organized in a Randomized Complete Block Design (RCBD) with two factors and three replications. The first factor was the variation in the size (mesh) of pandan leaf cellulose at three levels: 60 mesh (M1), 80 mesh (M2), and 100 mesh (M3). The second factor was the concentration of starch (tapioca) at 0.5% (P1), 1% (P2), and 1.5% (P3) (b/v). Observations in the study included tensile strength, elongation percentage, and the biodegradable water vapor transmission rate of the film from pandan leaf cellulose according to the JIS 1975 standard. The best treatment was found in M3P3, which had a tensile strength value of 64.65 MPa and a water vapor transmission rate of 4.92 (g/m²/day), meeting the JIS 1975 standard. It had room temperature resistance for 5 weeks and degraded within 2 weeks. However, the elongation percentage value of 44.58% did not meet the JIS 1975 standard.

Key words : *biodegradable film, cellulose, mesh, pandan leaf, and tapioca.*

ABSTRAK

PENGARUH LOLOS *MESH* TEPUNG SELULOSA DAUN PANDAN (*Pandanus amaryllifolius Roxb.*) DAN PENAMBAHAN TAPIOKA TERHADAP KARAKTERISTIK *BIODEGRADABLE FILM*

Oleh

SAFIRA NUR ANISA

Biodegradable film merupakan bahan kemasan ramah lingkungan yang mudah terurai secara sempurna oleh mikroorganisme di dalam tanah dan dapat dibuat dari sumber daya alam seperti daun pandan yang mengandung selulosa berkisar antara 30-35%. Penelitian ini bertujuan untuk mengetahui pengaruh lolos *mesh* tepung selulosa daun pandan dan penambahan tapioka terhadap karakteristik *biodegradable film* yang dihasilkan, serta mengetahui pengaruh interaksi antara konsentrasi tapioka dan variasi ukuran saringan tepung selulosa daun pandan untuk menghasilkan karakteristik terbaik *biodegradable film* dari daun pandan. Penelitian ini disusun dalam Rancangan Acak Kelompok Lengkap (RAKL) dengan dua faktor dan tiga ulangan. Faktor pertama adalah variasi ukuran (*mesh*) selulosa daun pandan sebanyak tiga taraf yaitu 60 *mesh* (M1), 80 *mesh* (M2), 100 *mesh* (M3). Faktor kedua yaitu konsentrasi pati (tapioka) 0,5% (P1), 1% (P2), dan 1,5% (P3) (b/v). Pengamatan pada penelitian yaitu kuat tarik, persen pemanjangan, laju transmisi uap air *biodegradable film* dari selulosa daun pandan sesuai standar JIS 1975. Perlakuan terbaik terdapat pada M3P3 yang memiliki karakteristik yaitu nilai kuat tarik 64,65 MPa dan laju transmisi uap air 4,92 (g/m²/hari) telah memenuhi standar JIS 1975, memiliki ketahanan suhu ruang selama 5 minggu, dan dapat terdegradasi selama 2 minggu. Namun nilai persen pemanjangan 44,58% belum memenuhi standar JIS 1975.

Kata Kunci : *biodegradable film*, daun pandan, *mesh*, selulosa, dan tapioka.