

## PENGARUH PENAMBAHAN *CLAY* DAN SORBITOL TERHADAP SIFAT FISIK *FILM* BIOPLASTIK DARI KULIT KENTANG

### INTISARI

Bioplastik merupakan plastik ramah lingkungan yang dapat digunakan layaknya plastik konvensional dan dapat hancur terurai oleh mikroorganisme. Bahan baku bioplastik salah satunya adalah pati, yang bisa diperoleh dari kulit kentang. Bioplastik yang terbuat dari pati mempunyai kelemahan yaitu mudah sobek, resistensi terhadap air rendah dan sifat penghalang terhadap uap air juga rendah. Oleh karena itu, diperlukan penambahan bahan lain untuk meningkatkan karakteristik fisik yaitu dengan penambahan *filler* dan *plasticizer*. Tujuan dari penelitian ini adalah untuk mengevaluasi pengaruh penambahan *filler clay* dan *plasticizer* sorbitol terhadap sifat fisik *film* bioplastik dari kulit kentang meliputi ketebalan, kuat tarik, nilai mulur, dan biodegradabilitas.

Penelitian ini dilakukan menggunakan Rancangan Acak Lengkap (RAL) dengan faktor pertama adalah penambahan *clay* (2, 4, 6 gram) dan faktor kedua adalah penambahan sorbitol (20, 25, 30 gram). Terdapat 9 perlakuan dengan dua kali ulangan analisis sehingga diperoleh 18 satuan percobaan. Total berat adonan yang digunakan dalam pembuatan satu *film* bioplastik berukuran 20x20 cm<sup>2</sup> berkisar antara 133 - 147 g yang berisi bahan-bahan seperti pati kulit kentang, *clay*, sorbitol, pelarut H<sub>2</sub>O serta asam asetat 25%. Penelitian ini dilakukan dalam 3 tahap yaitu: (1) ekstraksi pati kulit kentang; (2) pencetakan *film* bioplastik; (3) pengujian fisik *film* bioplastik dan analisis kadar pati kulit kentang. Hasil penelitian kemudian diuji secara statistik menggunakan uji ANOVA dan uji DMRT.

Hasil penelitian menunjukkan bahwa karakteristik optimum *film* bioplastik diperoleh dari variasi penambahan *clay* 4 g dan sorbitol 20 g dengan ketebalan *film* 0,82 mm, nilai kuat tarik *film* 7,36 MPa, nilai kemuluran *film* 18,73%, ketahanan terhadap air 76,06%, dan biodegradabilitas 38,02%.

**Kata kunci:** bioplastik, pati kulit kentang, *clay*, sorbitol

**THE EFFECT OF CLAY AND SORBITOL ADDITIONAL ON THE  
PHYSICAL PROPERTIES OF BIOPLASTIC FILM MADE FROM POTATO  
PEEL**

**ABSTRACT**

*Bioplastic are environmentally friendly plastic that can be used like conventional plastic and can be unraveled by microorganisms. One of the material use is starch, which can be obtained from potato peel. Bioplastic made from starch have weaknesses that are easy to tear, low water resistance and low water vapor barrier properties. Therefore, it is necessary to add other materials to improve the physical characteristics of starch-based bioplastics, by adding fillers and plasticizer. The purpose of this study was to evaluate the effect of adding filler clay and plasticizer sorbitol to the physical properties of bioplastic film from potato peel including thickness, tensile strength, elongation, water resistant, and ease of decomposition.*

*This research was conducted using a completely randomized design (RAL) with the first factor is the addition of clay (2, 4, 6 g) and the second factor is the addition of sorbitol (20, 25, 30 g). There were 9 treatments with two replicates of analysis so there were 18 experimental units were obtained. The total weight of 20x20 cm<sup>2</sup> bioplastic film ranged from 133 - 147 g which contained ingredients such as potato peel starch, clay, sorbitol, H<sub>2</sub>O and acetic acid 25%. This reseacrh was conducted in 3 stages: (1) Potato peel starch extraction; (2) Bioplastic film printing; (3) Physical testing of bioplastic film and analysis of starch content of potato peel starch extraction.*

*The results showed that the optimum characteristics of the bioplastic were obtained from variatons in the addition of 4 g clay and 20 g sorbitol with a film thicness 0.82 mm, a tensile strength value 7.36 MPa, and elongation value 18.73%, and resistance to water 75.06 %, and 38.02% of biodegradability.*

**Keywords:** *bioplastic, potato peel starch, clay, sorbitol*