

## ABSTRAK

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Judul : Sintesis dan Karakterisasi Bioplastik Berbahan Dasar Pati Singkong dengan Penambahan Minyak Kelapa Sawit sebagai Penolak Air

Fabrikasi bioplastik berbahan dasar pati singkong umumnya telah banyak dilakukan. Umumnya, pembuatan bioplastik bertujuan sebagai salah satu alternatif pengurangan limbah plastik khususnya dari kemasan makanan. Namun, bioplastik berbahan dasar pati singkong memiliki kekurangan terutama sifatnya yang mudah terpengaruh terhadap kelembaban dan ketahanan air yang rendah. Untuk meningkatkan hal tersebut, diperlukan penambahan material lain pada bioplastik seperti minyak kelapa sawit sebagai salah satu alternatif dalam meningkatkan sifat bioplastik. Sintesis bioplastik dibuat dengan metode pencampuran tiga bahan yaitu pati singkong, gliserol, dan minyak kelapa sawit dengan variasi komposisi pati:gliserol:minyak kelapa sawit yaitu 30:10:0 g, 30:10:1 g, 30:10:2 g, dan 30:10:3 g. Hasil menunjukkan bahwa penambahan minyak kelapa sawit mempengaruhi sifat fisik dan mekanik film bioplastik. Hasil uji tarik menunjukkan semakin banyak minyak kelapa sawit maka nilai kuat tarik semakin rendah. Hasil SEM bioplastik yang dihasilkan kurang sempurna, tidak homogen, dan tidak halus. Hasil uji densitas menunjukkan semakin banyak komposisi minyak kelapa sawit maka nilai densitas semakin menurun. Hasil uji sudut kontak cenderung hidrofilik. Hasil analisis FTIR dengan penambahan komposisi minyak kelapa sawit menunjukkan adanya gugus fungsi O-H dan C=O, sehingga bioplastik dapat terdegradasi. Hasil analisis DSC dengan penambahan komposisi minyak kelapa sawit akan menurunkan temperatur titik leleh bioplastik. Hasil uji biodegradabilitas menunjukkan bahwa pertumbuhan jamur semakin lama semakin meningkat.

**Kata kunci:** *Bioplastik, pati, singkong, gliserol, minyak kelapa sawit.*

## **ABSTRACT**

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*Title : Synthesis and Characterization of Bioplastic Based on  
Cassava Starch with Addition of Palm Oil as Water Repellent*

*Fabrication of starch-based on cassava bioplastic has been widely studied. Generally, the manufacture of bioplastics is aimed as an alternative to reduce plastic waste, especially food packaging. However, starch-based on cassava bioplastics have disadvantages that affected easily by moisture and low water resistance. To improve this, material addition is needed in bioplastics such as palm oil to improve the properties of bioplastics. Bioplastics synthesis are made by mixing of three ingredients, that are cassava starch, glycerol, and palm oil with variations in the composition of cassava starch:glycerol:palm oil, 30:10:0 g, 30:10:1 g, 30:10:2 g, and 30:10:3 g. The results showed that the addition of palm oil influenced the physical and mechanical properties of bioplastic films. The tensile test results showed that the more palm oil composition, the tensile strength is getting decreased. The results of SEM bioplastics produced are less than perfect, not homogeneous, and not smooth. The density test results showed that the more composition of palm oil, the value of density have getting decreased. Contact angle test results tend to be hydrophilic. The results of FTIR analysis with the addition of the composition of palm oil showed the presence of functional groups O-H and C=O, so that bioplastics could be degraded. The results of DSC analysis with the addition of the composition of palm oil will reduce the melting point temperature of bioplastics. The biodegradability test results showed that the composition of palm oil increased the fungal growth.*

**Keywords:** *Bioplastics, starch, cassava, glycerol, palm oil.*