

ABSTRAK

Bioplastik merupakan plastik bahan baku alami yang memiliki kelebihan mudah terdegradasi terhadap lingkungan. Salah satu bahan baku pilihan yang dapat dimanfaatkan menjadi bioplastik yaitu kandungan pati yang tinggi pada tepung Pisang Cavendish Sunpride *grade* B. Kadar pati pada tepung daging pisang dapat mencapai 83,34%, sedangkan pada tepung kulit pisang 59,29%. Bioplastik diproduksi dengan perbandingan antara tepung daging pisang dan tepung kulit pisang yang berbeda yaitu 65:0; 57,5:7,5; 50:15; 42,5:22,5; dan 35:30. Tujuan penelitian ini yaitu menentukan formulasi terbaik berdasarkan karakteristik sifat mekanik, *barrier*, dan *biodegradable* bioplastik berbasis tepung Pisang Cavendish *grade* B. Penelitian menggunakan metode eksperimental laboratorium dengan pendekatan secara deskriptif. Pengujian yang dilakukan meliputi analisis sifat fisik (densitas), sifat *barrier* (kadar air, daya serap air, laju transmisi uap air), sifat mekanik (kuat tarik, elongasi, *modulus young*), gugus fungsi (*Fourier Transform Infra Red-Attenuated Total Reflektance*), termal (*Thermo Gravimeter Analysis* dan *Differential Scanning Calorimetry*), morfologi permukaan (*Scanning Electron Microscopy*), serta *biodegradable*. Berdasarkan hasil analisis, formulasi terbaik ditunjukkan oleh sampel yang ditambahkan dengan 30% tepung kulit pisang. Pada pengujian sifat mekanik menghasilkan nilai kuat tarik sebesar 0,39 MPa, elongasi 54,50%, *modulus young* 1,98 MPa. Hasil sifat *barrier* menunjukkan nilai kadar air 4,36%, *swelling* 40,46%, dan laju transmisi uap air 83,10 g/m²/h, Sedangkan nilai persentase pertumbuhan *Aspergillus Niger* yaitu 83,46%.

Kata Kunci : Bioplastik, Pisang Cavendish, Pati

ABSTRACT

*Bioplastics are plastics made from natural raw materials which have the advantage of being easily degraded to the environment. One of the selected raw materials that can be utilized as bioplastics is the high starch content in Grade B Sunpride Cavendish Banana Flour. The starch content in banana flesh flour can reach 83.34%, while in banana peel flour, it is 59.29%. Bioplastics are produced with different ratios between banana flesh flour and banana peel flour, namely 65:0, 57.5:7.5, 50:15, 42.5:22.5 and 35:30. The purpose of this study was to determine the best formulation based on the characteristics of mechanical properties, barriers, and biodegradable bioplastics based on Grade B Cavendish Banana Flour. This study used a laboratory experimental method with a descriptive approach. The tests carried out consisted of analysis of physical properties (density), barrier properties (moisture content, water absorption, water vapor transmission rate), mechanical properties (tensile strength, elongation, Young's modulus), functional groups (Fourier Transform Infra Red-Attenuated Total Reflectance), thermal (ThermoGravimeter Analysis and Differential Scanning Calorimetry), surface morphology (Scanning Electron Microscopy), and biodegradable. Based on the analysis results, the best formulation was shown by samples added with 30% banana peel flour. The mechanical properties test produced a tensile strength value of 0.39 MPa, elongation of 54.50%, Young's modulus of 1.98 MPa. The results of the barrier properties showed a water content value of 4.36%, swelling of 40.46%, and a water vapor transmission rate of 83.10 g/m²/h, while the percentage value for the growth of *Aspergillus Niger* was 83.46%.*

Key words : Bioplastics, Cavendish Banana, Starch