

THE CHARACTERISTICS OF DURIAN PEEL BIOPLASTIC

ABSTRACT

The characteristics of durian peel bioplastic have been studied. Durian peels were sliced into small pieces, dried and crushed to produce fibers. Then, durian peel fibers were soaked in 7.5% NaOH solution at 60°C for 4 hours and bleached with 7.2% H₂O₂ solution at 55°C for 2 hours. Durian peel fibers and tapioca starch in the ratio of 1:9, 2:8, 3:7, 4:6, and 5:5 were mixed in water, added glycerin, and heated to thicken. Further mixtures were pressed, dried, and characterized by using FTIR spectrophotometer, microscope, and testing of the tensile strength, elongation and biodegradability. The results showed that the most optimal bioplastic was obtained at 3:7 ratio with the tensile strength of 5.0438 MPa and the elongation of 12.1063%. The bioplastics could be degraded in compost media under 10 days. This means that the bioplastics have the ability to degrade well in the soil..

Keywords: bioplastic, durian peel, tensile strength, elongation biodegradable

KARAKTERISTIK BIOPLASTIK KULIT DURIAN

ABSTRAK

Telah dilakukan penelitian tentang karakteristik bioplastik kulit durian. Kulit durian dipotong kecil-kecil, dikeringkan dan dihaluskan hingga diperoleh serat. Selanjutnya serat kulit durian direndam dalam larutan NaOH 7,5% pada suhu 60°C selama 4 jam dan dibleaching dengan larutan H₂O₂ 7,2% pada suhu 55°C selama 2 jam. Serat kulit durian dan tepung tapioka dengan rasio 1:9, 2:8, 3:7, 4:6, dan 5:5 dicampurkan dalam air, ditambahkan gliserin, dan dipanaskan hingga mengental. Campuran selanjutnya dicetak, dikeringkan, dan dikarakterisasi menggunakan spektrofotometer FTIR, mikroskop, serta dilakukan pengujian kuat tarik, elongasi dan biodegradabel. Hasil penelitian mengindikasikan bahwa bioplastik serat kulit durian dan tapioka yang baik diperoleh pada rasio 3:7 dengan nilai kuat tarik sebesar 5,0438 MPa serta elongasi 12,1063%. Bioplastik yang dihasilkan dapat terdegradasi di media kompos kurang dari 10 hari. Dengan demikian dapat dinyatakan bahwa bioplastik yang dihasilkan memiliki daya urai yang baik di dalam tanah.

Kata kunci: bioplastik, kulit durian, kuat tarik, elongasi biodegradabel