

ABSTRAK

Mei Putri Langit, 2022, Penambahan Kitosan Cangkang Kerang Darah (*Anadara Granosa*) dalam Pembuatan Bioplastik, Tugas Akhir, Program Studi : Teknik Lingkungan, Fakultas Teknik, Universitas PGRI Adi Buana Surabaya, dosen pembimbing : Dr.Rhenny Ratnawati, S.T, M.T.

Plastik *biogredable* merupakan material komposit plastik yang dapat terurai dengan cepat dan ramah lingkungan bila berinteraksi dengan tanah maupun mikroorganisme. Penelitian ini menggunakan bahan baku limbah tapioka dengan kitosan cangkang kerang darah (*anadara granosa*) dan gliserol. Penelitian ini bertujuan untuk mengkaji komposisi yang optimal dan kualitas bioplastik dari limbah tapioka dengan kitosan cangkang kerang darah (*anadara granosa*) dan gliserol, serta mengetahui kandungan gugus fungsi bioplastik dari limbah tapioka dengan kitosan cangkang kerang darah (*Anadara Granosa*) dan gliserol. Metode yang digunakan berupa eksperimental. Pembuatan kitosan cangkang kerang darah (*anadara granosa*) dengan tahapan proses deproteinasi, demineralisasi, dan deasetilasi. Pembuatan bioplastik dengan mencampurkan limbah tepung tapioka, kitosan, dan gliserol dengan komposisi 65%:35%:5ml, 70%:30%:5ml, dan 75%:25%:5ml serta tambahan aquades. Sampel dimasukkan kedalam penangas air dan diaduk pada suhu 80⁰C selama 15 menit. Bioplastik di cetak dalam aluminium foil, dikeringkan pada suhu 100⁰C selama 90 menit dan didinginkan pada suhu ruangan selama 6 jam. Uji laboratorium sampel dengan uji *tensile strength*, *elongation at break*, FTIR, dan biodegradasi sesuai SNI 7188.7:2016 kategori bioplastik mudah terurai. Hasil uji *tensile strength* pada sampel PBA1 0,75 Mpa, sampel PBA2 0,54 Mpa, dan sampel PBA3 0,34 Mpa. Nilai uji *elongation at break* sampel PBA1 23,68%, sampel PBA2 15,33%, dan sampel PBA3 12,12% hasil uji sampel tersebut belum memenuhi nilai baku mutu SNI 7188.7:2016 kategori bioplastik. Komposisi yang optimal dari bioplastik terdapat pada sampel PBA2 menggunakan bahan baku tepung tapioka dengan kitosan dan gliserol sebanyak 70%:30%:5ml dengan nilai uji *tensile strength* 0,54%, nilai *elongation at break* 15,33% biodegradasi 43%, dan memiliki kandungan bioplastik dengan gugus fungsi (C=C), (C-O), (C-H),(O-H), (C≡C), dan (CH₂)_n pada hasil uji FTIR.

Kata Kunci :*Bioplastik, Gliserol, Kitosan Cangkang Kerah Darah, Limbah Tapioka*

ABSTRACT

Mei Putri Langit, 2022, Addition of Blood Shells (*Anadara Granosa*) Chitosan in Bioplastic Manufacturing, Final Project, Study Program : Environmental Engineering, Faculty of Engineering, PGRI Adi Buana University Surabaya, supervisor : Dr.Rhenny Ratnawati, ST, MT

Plastic *Biogredable* is a plastic composite material that can decompose quickly and is environmentally friendly when interacting with soil and microorganisms. This study used tapioca waste as raw material with chitosan from blood clam shells (*anadara granosa*) and glycerol. This study aims to examine the optimal composition and quality of bioplastics from tapioca waste with blood clam shell chitosan (*anadara granosa*) and glycerol, and to determine the content of bioplastic functional groups from tapioca waste with blood clam shell chitosan (*Anadara granosa*) and glycerol. The method used is experimental. Making blood clam shell chitosan (*anadara granosa*) with the stages of deproteination, demineralization, and deacetylation processes. Making bioplastic by mixing waste tapioca flour, chitosan, and glycerol with a composition of 65%:35%:5ml, 70%:30%:5ml, and 75%:25%:5ml and additional water. The sample was put into a water bath and stirred at a temperature of 80^{0C} for 15 minutes. Bioplastics were printed in aluminum foil, dried at 100^{0C} for 90 minutes and cooled at room temperature for 6 hours. Laboratory test samples with *tensile strength*, *elongation at break*, FTIR, and biodegradation tests according to SNI 7188.7:2016 in the category of bioplastic easily decomposed. The results of the *tensile strength* on PBA1 samples were 0.75 Mpa, PBA2 samples were 0.54 Mpa, and PBA3 samples were 0.34 Mpa. test value for *elongation at break* the PBA1 sample is 23.68%, the PBA2 sample is 15.33%, and the PBA3 sample is 12.12%. The sample test results do not meet the quality standard value of SNI 7188.7:2016 for the bioplastic category. The optimal composition of bioplastics is found in the PBA2 sample using tapioca flour as raw material with chitosan and glycerol as much as 70%:30%:5ml with a *tensile strength* 0.54%, an *elongation at break* 15.33%, biodegradation of 43%, and has a bioplastic content with functional groups (C=C), (CO), (CH),(OH), (C≡C), and (CH₂)_n in the FTIR test results.

Keywords :*Bioplastic, Glycerol, Blood Collar Shell Chitosan, Tapioca Waste*