

Intisari

DEGRADASI BIOPLASTIK OXIMUM 1005 IB OLEH KULTUR BAKTERI PENDEGRADASI AMILUM DAN ASAM TANAT

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Bioplastik tergolong plastik ramah lingkungan yang dapat didegradasi oleh mikroorganisme karena terdiri dari polimer yang mudah terurai secara hayati atau dari bahan alami. Pati merupakan salah satu bahan dasar bioplastik yang paling umum dikembangkan di Indonesia. Penelitian ini bertujuan untuk mengetahui kemampuan kultur tunggal dan campuran bakteri yang unggul dalam mendegradasi bioplastik Oxium 1005 IB. Pada penelitian ini digunakan bioplastik Oxium 1005 IB yaitu bioplastik campuran amilum dan *Polyethylene Terephthalate* (PET), lalu isolat bakteri yang digunakan adalah SMG2, SMG3, SMG6, TURI4, GK3, GK5, dan GK8 sebagai pendegradasi amilum dan kode isolat PK29, PK31, PK32, PJ39, PK48, PK63, dan PK65 sebagai pendegradasi asam tanat yang memiliki kemiripan struktur dengan asam tereftalat yang merupakan penyusun *Polyethylene Terephthalate* (PET). Degradasi dilakukan dengan menggunakan medium NB (*Nutrient broth*) dalam kondisi aerob. Efektivitas degradasi diamati dengan menghitung penurunan berat bioplastik dihitung, lalu dianalisa dengan uji Anova dan Duncan, 5 perlakuan terbaik ditampilkan dalam bentuk grafik *Full Model*. Perlakuan kultur bakteri yang paling efektif untuk proses degradasi pada bioplastik Oxium 10005 IB adalah SMG2-PK29, SMG2 kultur tunggal, SMG2-PJ39, SMG2-PK31, dan PK29 kultur tunggal

Kata Kunci: Degradasi, bioplastik, amilum, *polyethylene terephthalate*, bakteri.

Abstract

DEGRADATION OF OXIMUM 1005 IB BIOPLASTIC BY CULTURE OF AMYLUM AND TANNIC ACID DEGRADING BACTERIA

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Bioplastics is classified as environmentally friendly plastics that can be degraded by microorganisms because it consists of polymers that are easily biodegradable or from natural materials. Starch is one of the most common bioplastic base materials developed in Indonesia. This study aims to determine the ability of a single and mixed culture of superior bacteria in degrading Oxium 1005 IB bioplastic. In this study, Oxium 1005 Ib bioplastic were used, it is a mixture of starch and Polyethylene Terephthalate (PET) bioplastic, then the bacterial isolates used were SMG2, SMG3, SMG6, TURI4, GK3, GK5, and GK8 as starch degraders and the isolates codes PK29, PK31, PK32, PJ39, PK48, PK63, and PK65 as tannic acid, which has similar structure to terephthalic acid which is a constituent of Polyethylene Terephthalate (PET). Degradation was carried out using NB (Nutrient broth) medium under aerobic conditions. The effectiveness of the degradation was observed by calculating the weight loss of bioplastics, then analyzed by Anova and Duncan test, then 5 best treatments were selected and show in Full Mode graphics. The most effective bacterial isolates in degrading of Oxium 1005 IB bioplastics are SMG2-PK29, SMG2 single culture, SMG2-PJ39, SMG2-PK31, and PK29 single culture.

Keyword : Degradation, bioplastic, amylum, polyethylene terephthalate, bacteria.