

Intisari

DEGRADASI BIOPLASTIK BERBASIS AMILUM DAN PET (*POLYETHYLENE TEREPHTHALATE*) OLEH BEBERAPA SPESIES JAMUR

Devi Sayekti Putri

Departemen Mikrobiologi Pertanian, Fakultas Pertanian,

Universitas Gadjah Mada

Bioplastik merupakan jenis plastik yang tersusun dari bahan yang berasal dari biomassa dan mudah diuraikan oleh mikroorganisme seperti jamur. Penelitian ini bertujuan untuk mengetahui kemampuan beberapa spesies jamur (*Aspergillus* sp. Ogb, *Aspergillus barwald*, *Aspergillus carbonarius*, *Trichoderma harzianum*, *Rhizopus* sp., dan *Mucor* sp.) dalam mendegradasi bioplastik berbasis amilum dan PET. Uji daya amilolitik spesies jamur secara kualitatif dilakukan dengan metode inokulasi titik (*point inoculation*) pada medium yang mengandung amilum. Aktivitas enzim amilase dilakukan dengan mengukur produk glukosa dengan metode DNS. Uji degradasi bioplastik diukur melalui penurunan bobot bioplastik dalam medium kultur selama inkubasi. Hasil penelitian menunjukkan bahwa daya amilolitik dari yang tertinggi hingga terendah dicapai oleh spesies jamur *Aspergillus* sp. Ogb, *A. carbonarius*, *Rhizopus* sp., *A. barwald*, *Mucor* sp., dan *T. harzianum*. Aktivitas enzim amilase jamur *Aspergillus* sp. Ogb, *A. barwald*, *A. carbonarius*, *T. harzianum*, *Rhizopus* sp., dan *Mucor* sp. berturut-turut sebesar 22,59; 23,41; 22,82; 19,20; 25,06; 19,59 U/mg protein. Semua jamur yang diujikan mampu mendegradasi bioplastik berbasis amilum dan PET, tetapi *Rhizopus* sp. memiliki kemampuan tertinggi dalam menurunkan berat lembar bioplastik, yaitu sebesar 5,24% selama inkubasi 30 hari.

Kata kunci: jamur, amilolitik, degradasi, bioplastik

Abstract

DEGRADATION OF AMYLUM AND PET (*POLYETHYLENE TEREPHTALATE*) BASED BIOPLASTIC BY SOME FUNGUS SPECIES

Devi Sayekti Putri

Department of Agricultural Microbiology, Faculty of Agriculture

Universitas Gadjah Mada, Yogyakarta

Bioplastic is a type of plastic that is composed of materials derived from biomass and is easily degraded by microorganisms such as fungi. This study aims to determine the ability of several species of fungi (*Aspergillus* sp. Ogb, *Aspergillus barwald*, *Aspergillus carbonarius*, *Trichoderma harzianum*, *Rhizopus* sp., and *Mucor* sp.) in degrading amylum and PET-based bioplastic. The amylolytic test of fungal species was qualitatively carried out by the point inoculation method in the medium containing starch. The amylase activity is carried out by measuring glucose product using DNS method. The degradation toward bioplastic is measured by decreasing the weight of bioplastics in the culture medium during incubation. The results showed that the highest to lowest amylolytic activity was achieved by fungus species of *Aspergillus* sp Ogb, *A. carbonarius*, *Rhizopus* sp., *A. barwald*, *Mucor* sp., and *T. harzianum*. The amylase activity of *Aspergillus* sp. Ogb, *A. barwald*, *A. carbonarius*, *T. harzianum*, *Rhizopus* sp., and *Mucor* sp. was 22,59; 23,41; 22,82; 19,20; 25,06; 19,59 U/mg protein respectively. All tested fungi were able to degrade starch and PET-based bioplastics which *Rhizopus* sp. showed the highest ability in reducing the bioplastic weight, which is 5.24% within 30 days.

Keywords: fungi, Amilolytic, degradation, bioplastic