

ABSTRACT

Larassinta Sekar Pribadi. 24020220140069. Degradation Mikroplastic *Low Density Polyetylen* (LDPE) With *Bacillus cereus* From Isolation Sediment Mangrove. Under the guidance Siti Nur Jannah dan Yustian Rovi Alfiansah

Microplastics are contaminants originating from particles ranging in size from 1 μm to less than 1000 μm . The type of microplastics found in the mangrove sediment of Segara Anakan with the highest concentration is LDPE (low-density polyethylene) at 32.08%. This study aims to identify indigenous bacteria from mangrove sediments that have the potential to degrade microplastics. There are 6 bacterial isolates isolated from the mangrove sediment of Segara Anakan, Cilacap. The methods used for LDPE microplastic degradation testing include clear zone assay, dry weight measurement, functional group analysis using FTIR, and molecular identification. Out of the 6 isolates, 3 potential ones that produced clear zones are ISM 12.1, ISM 13.3, and ISM 18, with diameters of 0.73 mm, 0.70 mm, and 1.33 mm, respectively. In the dry weight test, the isolate with the code ISM 13.3 showed the highest potential for degradation, with a reduction of 4.73% during a 40-day incubation period in MSM media. The functional groups formed during incubation are alkenes, alcohols, carboxylic acids, esters, and ethers, with wavenumbers of 1646.63 cm^{-1} and 1085.05 cm^{-1} . The isolate with the code ISM 13.3, which has the highest degradation potential, was identified using the 16S rRNA gene as belonging to the genus *Bacillus*, with phylogenetic tree analysis identifying it as *Bacillus cereus* strain DM-5.

Keywords: *Bacteria, degradation LDPE, sediment, mangrove*