

ABSTRACT

Plastics such as polyethylene terephthalate (PET) and polyurethane (PU) are utilized extensively in all sectors of life due to their versatility, durability, and low cost. However, its poor degradability has led to plastic waste accumulation worldwide, making it a major source of pollution. Recently, there has been growing interest in microbial plastic degradation as a promising strategy to tackle plastic pollution. Numerous microorganisms isolated from plastic-heavy environments have exhibited the ability to degrade PET and PU plastics through their enzymatic activity. Despite Indonesia's rich microbial diversity, research on plastic-degrading microorganisms is still very limited. Hence, this research project aimed to characterize the microorganisms isolated from landfills in Jakarta, specifically in the Cipayung landfill, and evaluate their ability to degrade plastic waste of PET and PU. The samples collected included soil, leachate, and plastic waste from 3 different areas. After growing in selective media, several potential colonies were isolated and subjected to a potency test to assess their plastic-degrading ability. The potency test involved weight loss measurement and Fourier transform infrared spectroscopy (FTIR) analysis. From the result of the plastic degradation potency test, it can be concluded that the isolates showed the potential to degrade plastic and utilize them as a carbon source to support growth. Particularly isolates obtained from soil 2 and leachate 3, which exhibited signs of PET degradation. Further investigations, such as extending the incubation period and conducting confirmatory tests like scanning electron microscopy (SEM), can be conducted to verify the biodegradation capability of the promising isolates.

Keywords: *plastic, microbial plastic degradation, polyethylene terephthalate (PET), polyurethane (PU), colony isolation*