

Karakterisasi molekuler konsorsium bakteri pendegradasi polietilen dari saluran pencernaan larva insekta pemakan plastik

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ABSTRACT

Polyethylene plastic waste, which is the most common type of plastic used as shopping bags (cracks), disposable (disposable) bottles and drinking glasses, as well as some children's toys, is believed to be carcinogenic due to the various additive compounds (plasticizers) it adds [1]. Most of this used plastic, around 90% is accumulated in the environment or burned, so it has caused a global problem because it can disrupt the chain of life in this universe. A series of comprehensive research needs to be carried out in order to produce a complete and applicable research model. This research is an initial study that aims to obtain a natural consortium of bacteria from the digestive tract of LDPE-type plastic-eating insect larvae.

In this study, two types of insect larvae were used, namely the hongkong caterpillar (*Tenebrio molitor*) and the german caterpillar (*Zophobas morio*). The results showed that these two insect larvae can consume plastic. Based on the results of metagenomic analysis, it is known that the diversity of bacteria in the digestive tract of the Hong Kong caterpillar and the German caterpillar, respectively, is 134 genera of bacteria and 148 genera of bacteria. Then from the results of the isolation of bacteria in the digestive tract, 43 isolates of bacteria were found from the digestive tract of the Hong Kong caterpillar and 31 isolates of bacteria from the digestive tract of the German caterpillar. Furthermore, the results of the selection of biofilm formation based on the absorbance value of dissolved crystal violet paint which were read with a microplater reader resulted in 6 bacterial isolates (2 HK and 4 JN) capable of forming biofilms. The ability to form biofilms is the main force for these bacteria to stick to hydrophobic plastics. Thus, this bacterial isolate has prospects for further development as a consortium of plastic-degrading bacteria.

Kata Kunci: *LDPE, bacterial consortia, Tenebrio molitor, Zophobas morio, biofilm*