

ABSTRACT

Eva Sundari Febriana. 24020220120003. Production Optimization and Characterization of Biosurfactant from Bacteria *Alcanivorax* sp. Under the guidance of Agung Suprihadi and Idris.

Biosurfactants are bioproducts produced by living things, especially microorganisms, and have the ability to reduce surface tension. Biosurfactants are surfactants synthesized from microorganisms, so they are more environmentally friendly than synthetic surfactants. This study aims to determine the optimum conditions in the production of biosurfactants and to determine the character of biosurfactants produced from *Alcanivorax* sp. The stages carried out are by conducting initial confirmation tests of biosurfactants using oil spreading, drop collapse, and emulsification index methods. Next, optimization of biosurfactant production was carried out by varying the type of carbon source, type of nitrogen source, and incubation time. The next process is biosurfactant production with optimum conditions. The results were then characterized using TLC and FT-IR methods to determine the type of biosurfactant group. After that, further potential test was conducted to determine the prospect of biosurfactant utilization using bioremediation test and total antioxidant activity test. The research design used was a completely randomized design (CRD) with the treatment of variations in the type of carbon source, type of nitrogen source, and incubation time with 3 replications. Data analysis was carried out using ANOVA, where if a significance value <0.05 was obtained, it could be continued to the DRMT test. The results of this study showed that *Alcanivorax* sp. bacterial isolates have biosurfactant activity that can be optimized by the addition of 1% olive oil carbon source, 3% urea inorganic nitrogen source, with an incubation time of 6 days. The biosurfactant produced is known to be a type of lipopeptide, indicated by the presence of lipid and protein groups in TLC and FT-IR results. In addition, further potential tests showed that the biosurfactant produced has a good ability as a bioremediation agent for oil contamination.

Keywords: Alcanivorax sp., Biosurfactant, Lipopeptides, Mangrove Sediment.