

Walliyana Kusumaningati, 2012. **Detection Capability of Aliphatic and Aromatic Hydrocarbon Degradation by Hydrocarbonoclastic Bacterial Isolates from The Sludge of Kenjeran Shore.** This bachelor degree thesis was in under advisory of Dr. Ni'matuzahroh and Dr. Sucipto Hariyanto, DEA, Biology Department, Faculty of Science and Technology, Airlangga University, Surabaya.

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### Abstract

This research aims to know the differences of 7 hydrocarbon bacteria (OA2E1, SA1A, OA2G, OA2E2, MB1C, SA2A, dan OA1E) from the sludge of Kenjeran shore on total plate count (CFU/mL) and pH in the process of aliphatic and aromatic hydrocarbon degradation, the hydrocarbon bacteria who have the highest total plate count (CFU/mL) in each aliphatic and aromatic hydrocarbon compounds, the capability of aliphatic and aromatic hydrocarbon degradation by the chosen hydrocarbon bacteria isolates from the mud of Kenjeran shore, and to know the species of hydrocarbon bacteria who have the best ability in aliphatic and aromatic hydrocarbon degradation. This is an experimental study by calculate the total plate count and pH of seven bacteria isolates (OA2E1, SA1A, OA2G, OA2E2, MB1C, SA2A, dan OA1E) with 0, 3, and 7 days of incubation in each hydrocarbon compound (aliphatic, monoaromatic, and polyaromatic). Also, calculate the aliphatic, monoaromatic, and polyaromatic hydrocarbon degradation percentage by the chosen bacteria with GC method. Then, determine the species of chosen bacteria through macroscopic and microscopic characteristic observation also did physiologic test through identification kits test. Data which are calculated in this study are the average of TPC (CFU/mL) and the average of pH. The data obtained were analyzed using one way statistic test ANAVA and then continued with Duncan test, while the data TPC in aliphatic compound, n-hexadecane, were analyzed using *Brown Forsythe* and continued with *Games-Howell* ( $\alpha = 0.05$ ) test. Result from this research showed that every bacteria isolates which tested have the difference on total plate count and pH value in aliphatic and aromatic (monoaromatic and polyaromatic) hydrocarbon degradation's process and be discovered that the best bacteria isolate in aliphatic and polyaromatic compound is SA2A, in fenol compound is OA2G. The chosen bacteria isolate SA2A, have degradation ability in n-hexadecane 11,395 ppm or 0,79 % from the early concentration and in phenanthren 154,736 ppm or 8,42 % from the early concentration. Then the chosen bacteria OA2G, have degradation ability 59,01 ppm or 4,15 % from the early concentration, and the species name of isolate SA2A is *Bacillus sp.SA2A* and the species name of isolate OA2G is *Bacillus sp.OA2G*.

Key words : Kenjeran shore, hidrocarbon, aliphatic, aromatic, degradation, bacteria