

EFFECTIVENESS OF *Acinetobacter* sp. BIOSURFACTANT ON OIL SLUDGE SOLUBILISATION

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ACINETOBACTER

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ABSTRACT

The aim of this research is to express the effectiveness of *Acinetobacter* sp. biosurfactant on oil sludge solubilisation. The test of oil sludge solubilisation by *Acinetobacter* sp. is conducted by using combination of biosurfactant concentrations (<CMC, =CMC, >CMC) with agitation duration (5, 10, 15 minutes), variation of temperatures and biosurfactant forms (biosurfactant in bacterial culture, supernatant and crude biosurfactant). Data collection was done by the weighing dissolved oil sludge using the filtration method. Descriptive test and Non parametric statistic were used to analyze the data with 95 % of significance ($\alpha = 0.05$), followed by Mann-Whitney test. The result of this research shows that the combination of biosurfactant concentration with agitation time can affect the oil sludge solubilisation. The best combination is the concentration superior to the CMC and 15 minutes of agitation duration with 50.5 % of dissolved oil sludge as a result. The results showed also that the variation of temperature affect the oil sludge solubilisation by the decrease of biosurfactant activity, proved by the decline of 29.09 % of dissolved sludge from 28° C to 90 °C. Finally it shows also that in the three forms of biosurfactant (biosurfactant in bacterial culture, supernatant and crude biosurfactant), biosurfactant in bacterial culture showed the best result with 19.75 % of dissolved oil sludge compared with supernatant and crude biosurfactant.

Key words: Acinetobacter sp., biosurfactant, oil sludge, solubilisation.