Isnaini Septi Irmayanti, 2012, Solubility of *Oil sludge* with Biosurfactant *Acinetobacter sp.* P2 (1) and Variation of Volumes *Crude* Lipase Enzyme *Bacillus sp.* LII63B, This research under the guidance Dr. N’matuzahroh and Dr. Ir. Tini Surtiningsih, DEA., Biology Departement, Faculty of Sains dan Teknologi, Universitas Airlangga, Surabaya.

**ABSTRACT**

The aim of this study was to know the effect of addition biosurfactant *Acinetobacter sp.* P2(1) and variation of volumes *crude* lipase enzyme *Bacillus sp.* LII63B on the solubility of *oil sludge*. This research is kind of laboratory experimental that used experimental design of RAL with nine treatments and three repetition. Biosurfactant from *Acinetobacter sp.* P2 (1) was produced in the AMS media (Synthetic Mineral Water) with a concentration of 4% molasses and 4% addition of starter bacteria *Acinetobacter sp.* P2 (1) ($A_{650nm} = 0.5$) then incubated in the shaker (120 rpm, 3 days). Characterization of biosurfactant products can be determined by calculating the value of surface tension and the emulsification activity of culture supernatant. *Acinetobacter sp.* P2(1) supernatant was obtained by culture centrifugation (4°C, 9000 rpm, 15 minutes), then extracted with ammonium sulfate in 60% saturated concentration and then continuing by lyophilization process to obtain *crude* biosurfactant products. CMC value of *crude* biosurfactant products on this study was 6.67 g/L. *Crude* lipase enzyme of *Bacillus sp.* LII63B culture supernatant obtained from 16 hours in production medium (NB +2% cooking oil). The solubility test of *oil sludge* was used agitation method and the dissolution achievement were detected by filtration method. *Oil sludge* solubility values were analyzed statistically by Kolmogorov-smirnov, Levene Test, Brown-Forsythe test and Independent Sample T-Test. This research showed that the treatments influenced solubility of *oil sludge*. Combination of biosurfactant 37,5% (v/v) and 37,5% (v/v) of *crude* lipases enzyme (BE3) showed the highest oil sludge solubility results with the percentage solubility of 46.62 ± 10.24%.

**Key words:** biosurfactant *Acinetobacter sp.* P2 (1), *crude* lipases enzyme *Bacillus sp.* LII63B, the solubility of *oil sludge*. 