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SIRIPONG VINGVON : CONTROL OF CARBON-TO-NITROGEN RATIO IN FEED FOR INCREASING OF
POLY- β -HYDROXYBUTYRATE PRODUCTIVITY FROM Alcaligenes eutrophus ATCC 17697 IN THE FED-
BATCH BIOREACTOR. THESIS ADVISOR : ASSOC. PROF. CHIRAKARN MUANGNAPOH, Dr.Eng. 130 pp.
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Alcaligenes eutrophus ATCC17697 was cultivated by fed-batch culture technique to increase poly- β -hydroxybutyrate (PHB) productivity. The results of batch fermentation at 30 °c showed that fructose, as carbon source, was better than glucose. The optimum condition for batch fermentation is fructose concentration 8.0 g/l (in flask) and 9.0 g/l (in fermenter) and pH of 7.0. In fed-batch fermentation, the cultivation was divided to two stages. The first was growth stage and the second was production stage. In the first stage, feed rate was controlled to maintain fructose concentration at 9.0 g/l by off-line fructose concentration analysis. The experimental results showed that high cell concentration of 53.28 g/l was obtained at 31 hour and the cell productivity was 1.72 g/l-hr. In the production stage, feeding nutrient of which C/N mole ratio were controlled at 30, 150, and infinite (only carbon in feed). These experiments showed that at C/N mole ratio of 150, the percent PHB accumulation in cell and PHB productivity were of 17.92 % dry weight and 0.22 g/l-hr, respectively.

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