

# # C616715 : MAJOR CHEMICAL ENGINEERING


KEY WORD: PHB/ A. eutrophus/ MICROFILTRATION/ BIOREACTOR/ AMMONIUM SULPHATE LIMITATION  
APICHART SANGRUNGRUENGKIT : PRODUCTION OF POLY- $\beta$ -HYDROXYBUTYRATE BY  
Alcaligenes eutrophus ATCC 17697 IN A BIOREACTOR COUPLING WITH MICROFILTRATION.  
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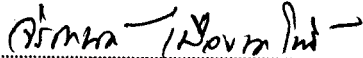
Microfiltration system was applied to production of poly- $\beta$ -hydroxybutyrate by Alcaligenes eutrophus ATCC 17697 in a bioreactor various operating conditions. From the study of microfiltration characteristics of this ceramic membrane showed that operating conditions should be at  $0^+$  kg/m<sup>2</sup> and 0.4 m<sup>3</sup>/hr for inlet pressure and recirculation rate respectively. From the fermentation results, we found that fructose, as carbon source, is better than glucose. Optimum condition for batch fermentation at 30 °C is fructose concentration of 8.0-9.0 g/l and pH of 7.0 with percent PHB accumulation in cell of 16.99% (by cell dry weight). When microfiltration system was applied to fermentation, at it was found that at dilution rate of 0.3 hr<sup>-1</sup> give maximum cell productivity (1.384 g/l-hr) and maximum cell concentration (88.01 g/l). After that these cells were stimulated to produce PHB by feeding nutrients which were controlled C/N ratio from 0-150 (by mole). These experiments showed that at C/N ratio of 32.77, the percent PHB accumulation in cell and PHB productivity are of 47.83% (by cell dry weight) and 0.66 g/l-hr respectively. In conclusion, the couple application of both systems could enhance PHB productivity.

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