

SARINTIP ANAMNART : Production of Penicillin Acylase from *Proteus rettgeri* in Fermenter. Thesis Advisor : Asso.Prof.Sanha Panichajakul, Ed.D. 77 pp.

Proteus rettgeri SPS-6 could produce penicillin acylase(PAase) constitutively in minimal medium with glucose as a sole carbon source. When *Proteus rettgeri* SPS-6 grown in a minimum medium containing 1.0 % starch hydrolysate at 28° c, yielding the maximum activity of PAase as high as 160 unit per mg total cell proteins. However, the production of *P. rettgeri* SPS-6 PAase was subject to catabolite repression by higher concentration of starch hydrolysate as well as glucose concentration more than 0.4 percents. The SPS-6 can not be growth on minimum medium supplement as the molasses(10 %) or cysteine(0.25 %) as a sole carbon source. Although aspartic acid(0.22 %) can stimulate growth of *P. rettgeri* but partially retarded rate of PAase production, whole valine partly decreased both growth and enzyme synthesis.

The SPS-6 strain can utilize both ammoniumsulfate and urea as a nitrogen source as well. Meanwhile, the acid hydrolysate of soybean meal inhibited PAase synthesis. Cultivation of *P. rettgeri* SPS-6 at 25°c and the initial pH at 7.8 rendered the maximum activity of PAase at 280 unit per mg total cell proteins. The optimal conditions for growth and enzyme production in 5-L fermenter were found as follows : agitation rate was 300 rpm with 0.5 vvm aeration rate, at initial pH 7.8 and keeping temperature constant at 25°c. Under the optimal conditions, SPS-6 strain can produce maximum PAase activity as high as 320 unit per mg total cell proteins. Continuous feeding of glucose to maintain a constant concentration of carbon source in between 2-3 mg/ml did not resulting in any significance enrichment of PAase activity.

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