

AMPAITIP SUKHOM : PARTIAL CHARACTERIZATION OF ANTIBIOTIC
FROM Bacillus sp. ANTAGONISTIC TO POTATO SCAB DISEASE.
THESIS ADVISOR : ASSO.PROF.SURINA CHAVANICH, 117 pp.

Bacillus sp. strain B1, the best antagonistic activity producer against potato scab, caused by Streptomyces scabies was found and selected by cross-streak and diffusion methods from 8 strains of Bacillus spp. which were isolated from soil on the surface of potato peels. To optimize antibiotic production of the selected strain, the composition of the media should contain 10.0 g/l glucose, 20.0 g/l soytone, 10.0 g/l malt extract, 0.028 g/l $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$, 0.005 g/l $\text{MgCl}_2 \cdot 6\text{H}_2\text{O}$, 0.010 g/l $\text{MnSO}_4 \cdot \text{H}_2\text{O}$, 1.60 g/l K_2SO_4 and 5.0 g/l CaCO_3 , pH 7.0-8.5. The culture were cultivated in 250 ml shake flasks and were incubated at 27°C. The maximum yield was obtained after 36 hrs. However, after the scaling up culture in a 5 l. fermenter, the maximum yield was reached after 16 hrs. with agitation rate of 400 rpm and aeration rate of 1 vvm.

Antibiotic isolated from culture broth was fractionated with 20-80% saturation of ammonium sulfate, then chromatography on Sephadex G-25 column and thin layer chromatography, respectively. Antibiotic activity was found in the second peak of protein from Sephadex G-25. Two bands of antibiotic were obtained from thin layer chromatography with the Rf value of 0.84 and 0.76 when using propanol:water:ammoniumhydroxide:ethylacetate (5:3:1:1) as the solvent system, each band had the maximum absorption of UV light at 203.6, 266.9 and 225 nm.

The other characteristics of the antibiotic were greatly soluble in water and were highly stable in phosphate buffer pH 8.0 at 4°C.