

# Isolation and Characterization of $\gamma$ -PGA-Producing Bacillus Strains

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## ABSTRACT

In this thesis, two  $\gamma$ -polyglutamic acid ( $\gamma$ -PGA) producing bacterial strains TPX 110A and TPX-108 were screened from soil samples. These two strains of bacteria were identified by 16S rDNA sequencing and revealed that they are similar to *Bacillus subtilis*. The production of  $\gamma$ -PGA of TPX 110A was better than TPX 108 and reached 35 g/L after crude extraction, therefore TPX 110A was chose for further analysis experiments. In order to increase the purity of bacterial produced  $\gamma$ -PGA, the products were dialyzed after ethanol precipitation, and then dried under vacuum. Further identification were proceeded to analyze the precipitants, TLC, GC/MS and protease K analysis experiments were done. Results showed that the product were similar to standard  $\gamma$ -PGA on TLC analysis, however, LC/MS identification was unclered. In GC/MS results, the acid hydrolyzed TPX 110A product was identical to L-glutamic acid. Comparing to bovine serum albumin, and protease K analysis also showed that the product can resist to protease K cleavage. Our results confirm that TPX 110A can highly produce  $\gamma$ -PGA.

Keywords :  $\gamma$ -polyglutamic acid、*Bacillus subtilis*、LC/MS、GC/MS、TLC

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