589f Production of Polyglutamic Acid from Mixed Glucose and Sucrose by Co-Cultivation of *Bacillus subtilis* and *Corynebacterium Glutamicum*

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Poly -γ-glutamic acid (γ-PGA) is a kind of water-soluble and biodegradable polymer with many applications in food, cosmetic and pharmaceutical industries. A novel strain with high poly -γ-glutamic acid productivity was isolated from fermented bean curd, a traditional Chinese food. The strain was named Bacillus subtilis ZJU-7 according to 16s RNA sequencing and its taxonomic characters. The culture conditions for γ-PGA production were evaluated. The most suitable carbon and nitrogen sources were sucrose and tryptone respectively. Exogenous L-glutamic acid was necessary for γ-PGA production and the productivity of γ-PGA increased up to 54.4 g/l upon the addition of 80g/l L-glutamic acid to the medium. In order to avoid exogenous addition of L-glutamic acid, a mixed carbon source (glucose and sucrose) was introduced to the co-cultivation system of Corynebacterium glutamicum and Bacillus Subtilis. The fermentation conditions were investigated systematically to adjust the growth curves of two different bacteria towards high production of poly -γ-glutamic acid. Over two separate fermentation processes, this integrated bioprocess gave some advantages, especially shorting fermentation time, reducing the production cost, etc. A simple separation procedure was also developed to obtain this high-purity biomaterial. The average molecular weight was about 1.24x106 Dolton.