URN etd-0407109-183715-1162
Author Ming-Fu Jeng
Author's Email Address No Public.
Statistics This thesis had been viewed 41 times. Download 70 times.
Department
Year 2006
Semester 2
Degree Master
Type of Document Master's Thesis
Language zh-TW.Big5 Chinese
Title Study of production of poly(γ-glutamic acid) by Bacillus subtilis (natto)
Date of Defense 0000-00-00
Page Count 67

Keyword
poly(γ-glutamic acid)
fermentation
Bacillus subtilis (natto)

Abstract
Poly(γ-glutamic acid) (γ-PGA) is a water-soluble biopolymer that can be found in Japanese traditional fermented food, natto, which has potential applications in the environmental protection, health food, medicine and cosmetics. This study has focused on the screening of cultural parameters for high γ-PGA production by B. subtilis (natto) N1. In general, the increase in broth viscosity implies the increase ofγ- PGA content. In this study, B. subtilis (natto) was incubated at 37℃ and 150 rpm by flask culture. The following results were obtained: 1, The biomass of the inoculum increased up to 60% by a two-step activation process. 2, N1(natto) generated higher biomass as cultured in LB medium (Yeast extract 15g/L, Tryptone 5g/L, Sodium chloride 4g/L and Glucose 30g/L). 3, Higher γ-PGA production was obtained when N1(natto) was fermented in modified M2 medium (Monosodium glutamate monohydrate 171.7g/L, Glucose 80g/L, Peptone 15g/L, Yeast extract 5g/L, Urea 3g/L and K2HPO4 2g/L). 4, Feeding modified M2 medium during fermentation raised 63.1% of the broth viscosity. Next, we investigated the effect of temperature, agitation, aeration, pH and feeding stratagy on γ-PGA production of natto N1 in a 5L jar fermenter. The highest broth viscosity were obtained under the cultural conditions of 37℃ , 350 rpm , 0.8vvm and pH=7.0. In conclusion：The natto N1 which was cultured in the 5L jar fermenter could not only increase 432.0% of the broth viscosity, but also reduce 50.2% of the fermentation time than that in the shaker flask. Thus, the optimal fermentation conditions could significantly increaseγ- PGA production.
Advisory Committee Shun-Lui Lee - advisor

Meng-Bor Hsu - advisor

Files etd-0407109-183715-1162-001.pdf

indicate access worldwide
Date of Submission 2007-07-27