

The Effects of Different Composition of Media and Cultivation Condition on the Metabolite Contents from *Bacillus subtilis*

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ABSTRACT

Natto is a traditional fermented food in Japan, the steamed soybeans are used as raw material and inoculated with *Bacillus subtilis* var. natto, which is so called solid fermentation. In this study, 6% concentrate protein added with the different proportions of sucrose and sodium glutamate as culture media, which are inoculated with *Bacillus subtilis* var. natto, and cultured with different shaking rates, and fermented for 24.28.32.36.48 hours. The fermented products were used to compare the metabolites including biomass, -PGA, protease and amylase activities, degree of hydrolysis, and free amino acid. The results were shown as follows: Biomass for the product from the medium of 10% sucrose added with 6% sodium glutamate cultured for 48hours by 175rpm shaking was 117%; -PGA production for the product from the medium of 5% sucrose added with 6% sodium glutamate cultured for 48hours by 175rpm shaking reached 206.1mg/100mL; Protease activity, for the product from the medium of 5% sucrose added with 0.5% sodium glutamate cultured for 48hours by 125rpm shaking reached 114.0×10^2 U/100mL; The amylase activities, for the product from the medium of 15% sucrose added with different proportion of sodium glutamate by different shaking rate cultured for 24hours were the highest among the treatments; The degree of hydrolysis of soy protein for the product from the medium of 15% sucrose added with 0.5% sodium glutamate cultured for 36hours by 125rpm shaking was about 42.68%. When the medium of 5% sucrose added with 0.5% sodium glutamate cultured for 48hours by 150rpm shaking, the Tyrosine and Glutamic acid contents reached 933mg/100mL and 1200mg/100mL, respectively. Conclusion, to advise fermentation condition of 5% sucrose added with 3% sodium glutamate cultured for 48hours by 125rpm shaking is better.

Keywords: *Bacillus subtilis* var. natto、soy protein concentrate、liquid culture、metabolite content and enzyme activity

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