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

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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 fermentated for 24.28.32.36.48 hours. The fermented products were used to compare the metabolites including biomass, γ-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%; γ-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 114.0×102U/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 fermention 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

Table of Contents

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