Bacillus subtilis var.natto和Rhizopus oligosporus發酵大豆凝乳?〃滲瞻　M凝乳活性之研究

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ABSTRACT

Rennet, the milk-clotting enzyme used in cheese-making is obtained from the stomach contents of the unweaned calf. Because of the difficulty in acquiring sufficient quantity of rennet for the cheese industry, other sources for the enzyme have been sought for many years. Natto is a traditional fermented food in Japan which is made by fermenting steamed soybeans with Bacillus subtilis. It is characterized by unique viscous material and flavor. Tempeh is a protein source of Indonesian diet, which is made by fermenting steamed dehulled soybeans inoculated with Rhizopus oligosporus and packed with banana leaf. The cotton-like hypha grow and make the fermented soybeans become pressed cake-form product with desirable flavor. This study was to investigate purification and milk-clotting activity of the enzyme from soybean fermented by Bacillus subtilis var. natto and Rhizopus oligosporus. The crude enzyme were extracted from the steamed soybeans inoculated with Bacillus subtilis var. natto and Rhizopus oligosporus. The clotting time, appearance, viscosity, tensity of the milk curd and electrophoretogram of the milk proteins were determined. Results showed that milk-clotting time, viscosity and tensity of curd for the rennet enzyme were better than others. The next best was Rhizopus oligosporus. The electrophoretogram of the milk proteins of the curd caused by all the enzymes had four fragments. The molecular weight of these four components were 32 kDa, 26 kDa, 16 kDa, and 14kDa, respectively. The microstructure of milk curds showed that the rennet curd was the compactest and the Bacillus subtilis var. natto curd was the loosest.

Keywords : 天貝;根黴菌;納豆;納豆菌;凝乳

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