

Parichad Sriraphan 2014: The Inactivation of Trypsin Inhibitor by Lactic Acid Bacteria Isolated from Soybean Pulp for Silage Fermentation. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Assistant Professor Pramuk Parakulsuksatid, Ph.D. 92 pages.

Fifty six lactic acid bacteria were isolated from soybean pulp (SBP). All these isolates were tested for proteolytic activity. It was found that seven isolates exhibited the ability to digest proteins. The reduction activity against trypsin inhibitor of these isolates was tested. Lactic acid bacteria isolate SBP3, SBP10, SBP16, SBP20, SBP24, SBP43 and SBP45 gave the reduction activities of trypsin inhibitors at 14.61, 35.59, 25.74, 21.84, 16.66, 11.12 and 28.36 respectively. The SB 10 which exhibited highest reduction activity against trypsin inhibitor with activity approximately 35.59 % was further identified using morphological, physical and biochemical characteristics according to the guideline from Bergey's Manual of Determinative Bacteriology. Moreover, 16S rRNA of this isolate was tested to identify bacterial species. It was demonstrated that 16S rRNA nucleotide sequence of SB10 was similar to *Lactobacillus fermentum* with 100% similarity. In order to investigate the optimum condition for trypsin inhibitor reduction, this strain was incubated at various temperatures (30, 37, 45 °C) for 24 hr with various concentrations of cell culture (1, 5, 10%w/w) and molasses (0, 3, 6, 9%w/w). The optimum condition was incubation at 37 °C, 5%w/w cell culture and 6%w/w molasses with the lowest trypsin inhibitor reduction of 2.62 mg/g soybean pulp (p<0.05). The fermented soybean pulp had 2.62 mg/g trypsin inhibitors, pH 3.4, 5.1% lactic acid, 75% dry matter, and 7.00×10^7 CFU of lactic acid bacteria/g, respectively. These characteristics of fermented soybean pulp have property shown as good quality silage.

Student's signature

Thesis Advisor's signature

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