ISOULATION AND CHARACTERIZATION OF ACID-SENSITIVE \textit{Lactobacillus plantarum} BCC 9546, A STARTER CULTURE FOR NHAM PRODUCTION

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ABSTRACT

This thesis reports the potential of an acid-sensitive \textit{L. plantarum} mutant to be used as a starter to reduce the post-acidification of Nham, a Thai-fermented sausage, during storage at ambient temperature (30 °C). Acid-sensitive mutants of \textit{L. plantarum} BCC 9546 were successfully isolated by selecting neomycin resistant mutants. Three representative acid-sensitive mutants (R5, R5-18 and N750-1) were used in this trial. In MRS broth, their growth and acid production (at 30 °C for 48 hours) were lower and their culture broth pH were higher than that of the wild-type strain. Mutant N750-1 had the highest pH of culture broth at the end of the 72 hours culturing period. The mutants had reduced H⁺-ATPase activity in acidic condition (pH 5.0) corresponding to their lower internal pH than the wild-type strain. Besides, the arginine deiminase activities were not found while glutamate decarboxylase activities were found to be very low in the tested \textit{L. plantarum} strains. Finally, a Nham fermentation trial was carried out at 30 °C for 3 weeks. Nham fermented by the wild-type strain had significantly higher amounts of released water than Nham fermented by the mutant, but they showed no significant difference in color. Although biogenic amines content was found to be higher in mutant fermented Nham, the value was below the allowable maximum level in food. In conclusion, Nham fermented by the mutant had longer shelf-life and less post-acidification, which gave a consistent product pH of about 4.6 for longer than the one fermented by wild-type.

KEY WORDS: ACID-SENSITIVE MUTANT/ H⁺-ATPase/ INTERNAL pH

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