Kittima Kongtong 2008: Comparison of Microbial Diversity during Natural and Starter Cultured Nham Fermentation. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology. Thesis Advisor: Assistant Professor Wanna Malaphan, Ph.D. 161 pages.

The aim of this study was to comparison of the genetic diversity of lactic acid bacteria (LAB) in fermented Nham with and without added starter culture *Lactobacillus plantarum* BCC 9546 by molecular method based on PCR-techniques. A total of 1,529 bacterial isolates were recovered for analysis. Based on restriction pattern of internal transcribed spacer (ITS)-PCR and 16S rDNA sequencing, the diversity of major LAB species was similar in both types of Nham during the early phase of fermentation but clearly different when the fermentation proceeded to 12 h and continued to differ until the end of fermentation. At the early phase of fermentation, *Latococcus garvieae* and *Lactococcus lactis* were the predominant species in both types of Nham when fermentation reached 6 h and 12 h, respectively. *Lb. plantarum* started to appear when the fermentation reached 12 h and became the predominant species in starter cultured Nham after 24 h of fermentation. In contrast, *Lc. lactis* remained the dominant species followed by *P. pentosaceus* in natural Nham at 24 h of fermentation. At the later phase (36-72 h) of fermentation, *Lb. plantarum* became the dominant species in both types of Nham fermentation while *P. pentosaceus* remained the second dominant species in natural Nham. Moreover, starter cultured Nham displayed the lower LAB diversity than in natural Nham especially after *Lb. plantarum* became the predominant species. In addition, *Lb. plantarum* isolates from starter cultured Nham were further characterized by repetitive DNA element PCR (rep-PCR) to assess the growth and survival of the starter culture *Lb. plantarum* BCC 9546. Our results proved that starter culture has been successfully grown and dominated in Nham fermentation. Therefore, it can be concluded that the use of *Lb. plantarum* BCC 9546 as starter culture to initiate the production of Nham had play a role in accelerating the fermentation process by increasing lactic acid production which subsequently resulting in decreasing the diversity of LAB species.

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