

Panward Prommadee 2014: Characterization of *Lactobacillus johnsonii* KUNN19-2 and *Pediococcus pentosaceus* KUNNE6-1 in Respect of the Probiotic Properties and Application in Fermented Chicken Cartilage (Nham Kor Khai). Doctor of Philosophy (Food Science), Major Field: Food Science, Department of Food Science and Technology. Thesis Advisor: Associate Professor Wunwiboon Garnjanagoonchorn, Ph.D. 242 pages.

*Lactobacillus johnsonii* KUNN 19-2 and *Pediococcus pentosaceus* KUNNE 6-1 were shown to be resistant to some antibiotics and inhibit growth of certain pathogens. Both strains were found as starter cultures that provide firmness, color and flavor to fermented meat products. In this study, both strains showed faster pH reduction and increasing number of lactic acid bacteria (TPC on MRS agar) during cartilage fermentation compared to natural fermentation. Survival of *Lb. johnsonii* KUNN19-2 and *P. pentosaceus* KUNNE6-1 at gastric condition with low pH of 1.5 were 60.40%, 40.51%, and in the presence of pepsin for 2 h were 70.97%, 58.80%, respectively. In addition, their survival in the intestinal conditions by the presence of pancreatin and bile salt for up to 4 h were at 57.14% and 54.47%. However, when *Lb. johnsonii* KUNN19-2 and *P. pentosaceus* KUNNE6-1 exposed to gastric phase and then continued to intestinal phase, their survival were reduced to 30.84% and 19.40%, respectively. Heat-treated cells of *Lb. johnsonii* KUNN 19-2 was able to induce both T and B cells proliferation and modulate IgG production in BALB/c mice spleen cells by *ex vivo* test for 3.66 and 4.239 µg/ml, respectively whereas *P. pentosaceus* KUNNE 6-1 induced only B cells proliferation and stimulated IgG production for 3.83 µg/ml. The results illustrated that both strains have potential as probiotic candidate. The microbial diversity of *Lb. johnsonii* KUNN19-2 inoculated sample showed in DGGE is sharply reduced compared to control. They were divided into 3 groups which indicated 1-2 dominated strains through the process. Although this study failed to monitor *Lb. johnsonii* KUNN19-2 in fermented chicken cartilage but the validated extraction method for suitable DNA is suggested for future study.

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Thesis Advisor's signature