

Chollada Noychantira 2010: Characterization of Antimicrobial Substances from *Lactobacillus* sp. Isolated from Chicken Intestine. Master of Science (Biotechnology), Major Field: Biotechnology, Department of Biotechnology. Thesis Advisor: Associate Professor Sunee Nitisinprasert, D.Sc. 160 pages.

Eleven strains of Lactobacilli (LAB), *Lactobacillus fermentum* KUB-C33, KUB-D18, KUB-D39, KUB-D73, KUB-J92 *L. salivarius* KUB-I48, KUB-I49, KUB-J61 *L. reuteri* KUB-D28 and *Lactobacillus* sp. KUB-C44, KUB-D26 isolated from chicken intestine, were studied for their antimicrobial activities against both Gram-positive and Gram-negative pathogenic indicator strains of *Staphylococcus aureus* TISTR 029, *Escherichia coli* O157:H7, *Salmonella* Enteritidis DMST 17368, *Shigella dysenteriae* DMST 15111 and *Vibrio parahaemolyticus* ATCC 317802. Their antimicrobial compounds produced consisted of 0.101 to 0.191 M lactic acid, 0.055 to 0.098 M acetic acid and other substances. Investigation of chemical structure of other substances by enzymatic treatment showed that these substances were possible to be protein (P), carbohydrate (C), and lipid (L) which could be divided into two groups. The first group designed as bacteriocin like substance with various structure of P, P-C, P-L and P-C-L while the latter one were non-bacteriocin of C, L and L-C. Each LAB could produce different antimicrobial substances of 1 to 3 types. When these 11 LAB strains were screened for competitive inhibition activity against target strains at different pH of chicken gastro-intestinal tract, it was found that the group1 of KUB-D28, KUB-D73, KUB-I49, KUB-J61; group2 KUB-I49, KUB-J61, KUB-I48; group 3 KUB-I48, KUB-I49; group4 KUB-I48, KUB-I49, KUB-J61 and group 5 KUB-D73, KUB-I48, KUB-I49, KUB-J61 exhibited inhibitory activity against all target strains of 56.79 to 100, 63.20 to 100, 59.71 to 100, 29.21 to 100 and 20.02 to 100 at pH of crop, duodenum, jejunum, ileum and cecum, respectively. The mixture of 5 selected LAB strains of KUB-D28, KUB-D73, KUB-I48, KUB-I49 and KUB-J61 displayed 100% inhibition activity against all target strains at pH of crop and duodenum while it did partial activity of 71 to 100%, 55.8 to 100% and 10.9 to 64% at pH of jejunum, ileum and cecum, respectively.

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Student's signature

Thesis Advisor's signature