

Kannika Thongkhao 2009: Cloning and Expression of Salvicin K and Antimicrobial Like Bacteriocin β Genes of *Lactobacillus salivarius* K4. Master of Science (Genetic Engineering), Major Field: Genetic Engineering, Interdisciplinary Graduate Program. Thesis Advisor: Mr. Kiattawee Choowongkamon, Ph.D. 120 pages.

Bacteriocin is an antimicrobial protein produced by bacteria to inhibit the growth of similar bacteria. Two isoforms of bactericins, Salvicin K (sal K) and antimicrobial like bacteriocin β (alb β), were identified from *Lactobacillus salivarius* K4 which was isolated from a chicken intestine. These bacteriocins are similar to the bacteriocins from *L. salivarius* subsp. *salivarius* UCC118 which was isolated from the human gastrointestinal tract, called Abp118 α and Abp118 β . These bacteriocins have the inhibiting activity against other lactic acid bacteria such as *Lb. sakei* and *Leuconostoc* sp. In this study, we reported the expression of sal K and alb β bacteriocin in *E. coli* using both the Glutathione-S-transferase (GST) fusion system (pGEX4T-1) and the intein fusion systems (pTYB1 and pTYB12). The results showed that the active sal K bacteriocin cannot be expressed in pGEX4T-1 expression vector and pTYB1 expression vector. The active alb β bacteriocin can be expressed in pGEX4T-1 expression vector but its amino acid sequence was incorrect. The active alb β bacteriocin can be expressed in the intein fusion protein and can inhibit *Leuconostoc mesenteroides* subsp. *mesenteroides* JCM 6124^T if the alb β bacteriocin was at the N-terminus of fusion protein (pTYB1). However, the fusion proteins that the sal K and alb β bacteriocin were at the C-terminus of fusion protein (pTYB12) were aggregated and had no activity.

For the error prone PCR experiment, the mutated of alb β bacteriocin were cloned into pTYB1 expression vector. The results showed that the randomly mutated alb β genes were can be generated. However, there is no protein expression on all isolated mutant plasmids. This may due to the no full-length of alb β bacteriocin was generated.

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