ABSTRACT

Plantaricin Characterization from Four Strains of *Lactobacillus plantarum* Based on Sensitivity to Tripsin Enzyme

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Lactic acid bacteria (LAB) has been used as biological preservative for thousands years in food processing. LAB produces many antimicrobial substances, one of them is bacteriocin. Four strains of *Lactobacillus plantarum* (1A5, 1B1, 2B2, and 2C12) were isolated from Indonesia local beef and have identified producing bacteriocin called plantaricin 1A5, 1B1, 2B2, and 2C12. The pure plantaricins were obtained from purification steps, consisted of purification partial using ammonium sulphate precipitation, dialysis, and purification using chromatography exchange. The objective of this research was to study characteristic plantaricin from *Lactobacillus plantarum* 1A5, 1B1, 2B2, and 2C12 to proteolytic enzyme degradation. The characterization was determined by sensitivity assay to tripsin enzyme with antagonistic assay against indicator bacterias (*Pseudomonas aeruginosa* ATCC 27853, *Staphylococcus aureus* ATCC 25923, *Bacillus cereus*, *Salmonella enteritidis* ser. Thypimurium ATCC 14028, and *Escherichia coli* ATCC 25922). The result showed that plantaricin 1A5, 1B1, 2B2, and 2C12 could inhibit the indicators bacterias consisted of Gram positive bacteria and Gram negative bacteria. Tripsin enzyme treatment caused the declining of plantaricin protein concentration, and plantaricin 2C12 has the highest declining percentage of protein concentration. The activities of the plantaricin 1A5, 1B1, 2B2, and 2C12 decreased after treatment with tripsin enzyme. The declining of plantaricin activities were determined by the inhibition zone as result from antagonistic assay.

*Keywords*: Bacteriocin, *Lactobacillus plantarum*, plantaricin, tripsin, antagonistic assay