ABSTRACT

Stability and Antimicrobial Activity of Plantaricin Produced by
Lactobacillus plantarum at Alkaline pH

Supriatna, D., I. I. Arief, and Jakaria

Plantaricin produced by *L. plantarum* is known to display an adaptive response to alkali stress that enhances its capacity to more effectively stable at alkali condition. The aim of the research was to examine the stability of plantaricin produced by *L. plantarum* 1A5, 1B1, 2B2 and 2C12 and its antimicrobial activity at alkaline pH. The experiment was done based on completely randomized design (CRD) with factorial arrangement 2 x 4, two levels of pH value and four levels of *L. plantarum* strains in three replications. Variables analyzed were protein concentration, inhibition zone of the antagonistic test was assayed by agar well diffusion and antimicrobial activity of plantaricin against indicator bacteria at alkaline pH. Plantaricin was found to be sensitive to alkaline treatment. No interaction between pH and strains of *L. plantarum* to antimicrobial activity of plantaricin (P>0.05). Plantaricin showed antimicrobial activity against Gram positif and Gram negatif bacteria including *S. typhimurium* ATCC 14028, *S. aureus* ATCC 25923, *E. coli* ATCC 25922, *P. aeruginosa* ATCC 27853 and *B. cereus*. Plantaricin produced by *L. plantarum* 1A5, 1B1, 2B2 and 2C12 was stable at alkaline pH but the stability of plantaricin decreased because of alkaline treatment to *S. typhimurium* ATCC 14028 (P<0.01). Stability of plantaricin after alkaline treatment showed plantaricin potentially could be used as biopreservative on alkali products.

Keywords: *Lactobacillus plantarum*, alkaline pH, plantaricin, biopreservative.