ABSTRACT

A preliminary antimicrobial assay showed the antimicrobial activity of *P. acidilactici* but the SDS-PAGE did not reveal pediocin, an antimicrobial peptide produced by *Pediococcus* strain. The efficient downstream processing of *P. acidilactici* fermentation is studied to analyze pediocin. This research is conducted to assess the compatibility of different methods in concentrating pediocin in the cell-free supernatant (CFS) i.e. heat denaturation and adsorption-desorption. In heat denaturation, the thermostable pediocin will remain soluble and can be observed in the supernatant while removing unconcerned proteins. From five different temperatures, the result of 80°C showed the highest inhibition zone. Remarkably, heating of CFS at 100°C and 120°C still showed antimicrobial activity during agar-well diffusion assay against *L. monocytogenes* with only a slight decrease in activity; thus, thermostable peptide might be involved. While the Bicinchoninic acid (BCA) assay showed an irregular pattern indicating that heat does not significantly affect the protein concentration. In adsorption-desorption, bacteriocin will attach to the cell at a pH of 6.5 and will be detached when adjusted to 2. The study found no antimicrobial activity from fermentation broth subjected to adsorption-desorption. Hence, the pediocin failed to be obtained through the adsorption-desorption and this method is not suitable for the pediocin synthesized by this specific *P. acidilactici* strain studied in this research. Future studies could include ammonium sulfate precipitation with optimum saturation percentage to further concentrate pediocin and detection of pediocin with Tricine-SDS-PAGE with 16% gel

Keywords: *Pediococcus acidilactici*, pediocin, antimicrobial activity, fermentation, protein, heat-stable