

Supannika Netweera 2014: Optimization of Coconut Waste Water as a Substrate for Bacteriocin Production by Lactic Acid Bacteria. Master of Science (Microbiology), Major Field: Microbiology, Department of Microbiology. Thesis Advisor: Assistant Professor Wanna Malaphan, Ph.D. 115 pages.

Chemical preservatives have been used for controlling of food borne pathogens in foods. But it always caused adverse effect to human healths due to its residual contaminant in foods. Therefore, bacteriocin of LAB is one alternative to use as biological food preservative. At present, study on bacteriocin production by LAB usually performed on synthetic medium MRS which is quite expensive. Replacement by cheap medium would be beneficial for bacteriocin production in the future

In this study, *Pediococcus pentosaceus* KU-F2 capable of growth in modified coconut water supplemented with 1% Yeast Extract, 0.5% K₂HPO₄ and 0.1% Tween 80, incubated at 37°C support bacteriocin production with antilisterial activity similar to in MRS broth (12,800 AU/ml). In addition, stability of bacteriocin at -20°C still effective as long as 17 months.

Bacteriocin produced by *Pediococcus pentosaceus* KU-F2 grown in modified coconut water medium showed a potent antilisterial activity. Artificially inoculated of *Listeria monocytogenes* DMST 17303 on fresh cabbage at initial contamination of 3 Log CFU/g then applied in wash water containing 512 AU/ml of bacteriocin resulted in 100% of decontamination. In addition, treated fresh cabbage can be kept prolong at refrigeration temperature for 6 days without any increasing of bacterial cells. At high contamination of 5 Log CFU/g, bacteriocin activity 5,120 AU/ml was as effective as 100 ppm hypochlorite solution and can reduced 3-4 Log CFU/g. The data obtain demonstrated the potent sanitizing agent of bacteriocin for fresh vegetables in order to reduce the chemical residues and increase food safety.

Student's signature

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