

Abstracts

The 15th Annual Meeting of the Thai Society for Biotechnology

**“Sustainable Development of SMEs
Through Biotechnology”**

and

**JSPS - NRCT Symposium
“The Forefront of Bioinformatics
Application”**

February 3 - 6, 2004

Pang Suan Kaew Hotel, Chiang Mai, THAILAND

Bacteriocin Production by Homolactic Starch-Utilizing Bacteria

Jitraporn Sansit and Sureelak Rodtong

School of Microbiology, Institute of Science, Suranaree University of Technology, Nakhon Ratchasima 30000, Thailand

Bacteriocins, proteinaceous bactericidal compounds produced by bacteria, are currently much interest in the application in food industry. Lactic acid, especially L(+)-lactic acid produced by the bacterial fermentation of glucose, is used as a raw material for biodegradable polymer production, and for food and cosmetic preservation. Based on a cheap and abundant raw material, the starch-utilizing bacteria that could potentially produce both lactic acid and bacteriocins will be very useful for both the acid and antimicrobial compound production. This study aims to investigate bacteriocin production by homolactic starch-utilizing bacteria. A total of 119 isolates of starch-utilizing and lactic acid-producing bacteria were screened for their bacteriocin production capability. A homofermentative isolate identified as belonging to the genus *Lactococcus* showed its bacteriocin activity against the Gram-positive coccus, *Staphylococcus aureus* TISTR 029, when detected by the agar well diffusion technique. The crude bacteriocin did not inhibit growth of *Escherichia coli* TISTR 887, *Bacillus cereus* TISTR 687, and *Bacillus subtilis* TISTR 008. The selected isolate could not produce bacteriocin in MRS medium. But the medium containing cassava starch could support its production under anaerobic condition at 30°C for 18 hours when 10% (v/v) inocula of late-exponential phase (10^6 CFU/ml) were applied. The suitable production medium composed of (g/l); cassava starch, 10; tryptone, 10; beef extract, 2; yeast extract, 4; K_2HPO_4 , 8.7; KH_2PO_4 , 8; $MgSO_4 \cdot 7H_2O$, 0.2; $MnSO_4 \cdot 4H_2O$, 0.05; Tween 80, 1; and citric acid diammonium salt, 2. The gene coding for bacteriocin was also detected by amplifying using nisin gene-specific primers. The characterization of bacteriocin and gene encoding bacteriocin of *Lactococcus* isolate has been being performed.

Key words : bacteriocin, lactic acid, starch, fermentation