

**PENGGUNAAN BERBAGAI JENIS BAHAN PELINDUNG UNTUK
MEMPERTAHANKAN VIABILITAS BAKTERI ASAM LAKTAT YANG DI
ISOLASI DARI AIR SUSU IBU PADA PROSES PENGERINGAN BEKU**

[Utilization of various cryogenic agents during freeze drying to Maintain the viability of Lactic Acid Bacteria Isolated from breast milk]

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Diterima 21 Januari 2009 / Disetujui 18 Mei 2010

ABSTRACT

*Lactic acid bacteria are the most important bacteria having potential as probiotic. The objectives of the present study were to examine the growth of Lactic Acid Bacteria, identify the Lactic Acid Bacteria capable of surviving and evaluate the best cryogenic agents that protect the viability of Lactic Acid Bacteria during freeze drying. Four cryogenic agents, i.e. sucrose, lactose, skim milk and maltodextrin, were used in freeze drying of three species of Lactic Acid Bacteria, i.e. *Pediococcus pentosaceus* A16, *Lactobacillus brevis* A17 and *Lactobacillus rhamnosus* R21 isolated from breast milk. Evaluation included viability before and after freeze drying, survival of freeze dried culture in 0.5 % bile salt and low pH for 5 hours. The result showed that three of cryogenics, i.e. sucrose, lactose and skim milk improved the viability of freeze dried of all lactobacilli, except maltodextrin that did not give protection to *L. rhamnosus* R21. Evaluation on the survival of LAB in 0.5 % bile salt showed that cryogenic agents improved the survival rate of all Lactic Acid Bacteria during freeze drying. The cryogenic also improved the survival rate of LAB at low pH, with the best protection given by skim milk on *L. rhamnosus* R21.*

Key words : *isolate from breast milk, freeze drying, cryogenic, probiotic*