

**PENGARUH KOMBINASI CRYOPROTECTANT SUSU SKIM DAN
SUKROSA PADA VIABILITAS KULTUR KERING BEKU**

Lactobacillus plantarum Dad 13

ABSTRAK

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Penelitian ini bertujuan untuk mempelajari pengaruh kombinasi *cryoprotectant* skim dan sukrosa pada viabilitas serta *sub lethal injury* *L. plantarum* Dad 13 selama tahap pembekuan, pengeringan beku dan masa penyimpanan kultur kering beku. Penelitian diawali dengan produksi biomassa *L. plantarum* Dad 13 menggunakan media whey:sukrosa 3%:2% (b/b) yang kemudian diresuspensi dengan variasi kombinasi skim dan sukrosa dilanjutkan pembekuan pada suhu -40°C selama 24 jam, pengeringan beku pada suhu -40°C selama 72 jam dan kemudian penyimpanan kultur kering beku yang diperoleh pada -40°C selama 4 minggu. Kombinasi *cryoprotectant* memberikan perlindungan pada *L. plantarum* Dad 13 selama tahap pembekuan -40°C, 24 jam dengan nilai viabilitas 95,88% log hingga 96,42% log. Penurunan siklus log yang menunjukkan *sub lethal injury* antara 0,20-0,26. Viabilitas *L. plantarum* Dad 13 pada akhir pengeringan beku berkisar 93,32% log-95,11% log. Penurunan siklus log yang menunjukkan *sub lethal injury* antara 0,02-0,11. Selama penyimpanan kultur kering beku *L. plantarum* Dad 13 viabilitas berkisar 97,42% log-99,12% log dengan besaran *sub lethal injury* tidak lebih dari 0,10 siklus log.

Kata Kunci : *Cryoprotectant*, *Freeze Drying*, *Lactobacillus plantarum* Dad

EFFECT OF COMBINATION SKIM MILK AND SUCROSE CRYOPROTECTANT ON VIABILITY OF FREEZE DRIED

Lactobacillus plantarum Dad 13

ABSTRACT

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The objectives of this study were to evaluate the effect of combination skim and sucrose cryoprotectant on viability and sub lethal injury of *L. plantarum* Dad 13. The Biomasses of *L. plantarum* Dad 13 were produced by whey:sucrose 3%:2% (w/w) media. Natant was resuspended in combination of skim and sucrose variations which was subsequently freezed in -40°C for 24 hours. After that, they were subjected to freeze drying step in -40°C for 72 hours to get freeze dried culture. And finally, freeze dried of *L. plantarum* Dad 13 was stored in -40°C for 4 weeks. The viability after freezing were approximately 95,88% log-96,42% log with 0,20-0,26 log log cycle sub lethal injury. It was found that after freeze drying step the viability were around 93,32% log-95,11% log with 0,02-0,11 log cycle sub lethal injury. During freeze storage periods, the viability of dried cultures were 97,42% log-99,12% log with the total sub lethal injury less than 0.10 log cycle.

Keywords : *Cryoprotectant, Freeze Drying, Lactobacillus plantarum* Dad