

Penggunaan Media Susu dengan Berbagai Kadar Lemak untuk Produksi Starter Yogurt Probiotik *Indigenous* dengan Proses *Spray Drying*

INTISARI

Produk yogurt probiotik semakin populer di Indonesia. Untuk mengurangi impor kultur *starter*, *starter* yogurt lokal perlu dikembangkan. *Lactobacillus plantarum* Dad-13 adalah strain probiotik *indigenous* yang layak dikembangkan sebagai *starter* yogurt lokal, dengan *Streptococcus thermophilus* Dad-11 sebagai kultur pendamping. Tujuan penelitian ini adalah untuk melihat pertumbuhan biomassa kultur campuran probiotik *indigenous* pada media susu dengan berbagai kadar lemak, kehilangan biomassa kultur campuran setelah proses *spray drying*, serta pengaruh penyimpanan terhadap viabilitas kultur.

Kombinasi kultur *L. plantarum* Dad-13 dan *S. thermophilus* Dad-11 masing-masing sebanyak 10^7 CFU/ml (1:1) diinokulasikan ke media susu rendah lemak (kadar lemak 1,25%), media susu lemak moderat (kadar lemak 2,96%) dan media susu kaya lemak (kadar lemak 4,68%), kemudian diinkubasi 16 jam pada suhu 30°C . Selanjutnya susu fermentasi di-*spray drying* dengan suhu inlet $100\pm 2^{\circ}\text{C}$ dan suhu outlet $\pm 60^{\circ}\text{C}$. Bubuk *spray-dried* yang diperoleh dikemas dengan *aluminium foil* dan disimpan pada suhu *refrigerator*.

Kenaikan biomassa sel rata-rata pada semua media fermentasi adalah sekitar 1,2 siklus log. Sedangkan kehilangan sel akibat *spray drying* berkisar antara 1,0 – 1,7 siklus log. Konsentrasi kultur sel pada bubuk *spray-dried* adalah antara 8,3 – 9,0 CFU/g, memenuhi syarat untuk penggunaan sebagai starter yogurt komersial. Penurunan jumlah sel selama 4 minggu penyimpanan suhu rendah kurang dari 1 siklus log..

Kata kunci: *L. plantarum* Dad-13, *S.thermophilus* Dad-11, *starter* yogurt, probiotik *indigenous*, susu rendah lemak, *spray drying*.

Use of Milk with Various Fat Levels as Media for the Production of Indigenous Probiotic Yogurt Starters with Spray Drying Process

ABSTRACT

Probiotic yogurt products are increasingly popular in Indonesia. To reduce the import of starter cultures, local yogurt starters need to be developed. *Lactobacillus plantarum* Dad-13 is an indigenous probiotic strain that deserves to be developed as a local yogurt starter, with *Streptococcus thermophilus* Dad-11 as a companion culture. The purpose of this study was to look at biomass growth of indigenous probiotic mixed cultures in milk media with various fat levels, loss of mixed biomass culture after the spray drying process, and the effect of storage on culture viability.

The combination of *L. plantarum* Dad-13 and *S. thermophilus* Dad-11 cultures were 10^7 CFU / ml (1:1) inoculated into low fat milk media (1.25% fat content), moderate fat milk media (2.96% fat content) and fat-rich milk media (4.68% fat content), then incubated 16 hours at 30⁰C. Furthermore, fermented milk is spray drying with an inlet temperature of 100±2⁰C and outlet temperature ±60⁰C. Spray-dried powder obtained is packed with aluminum foil and stored at refrigerator temperature.

The increase in average cell biomass in all fermentation media is about 1.2 log cycles. Whereas cell loss due to spray drying ranges from 1.0 to 1.7 log cycles. The concentration of cell culture in spray-dried powder is between 8.3 - 9.0 CFU/g, eligible for use as a commercial yogurt starter. Decreasing the number of cells during 4 weeks of low temperature storage is less than 1 log cycle.

Keywords: *L. plantarum* Dad-13, *S. thermophilus* Dad-11, yogurt starter, indigenous probiotics, low-fat milk, spray drying.