

VIABILITAS PROBIOTIK INDIGENUS PADA PROSES PENGERINGAN BEKU DAN PEMBUATAN ES KRIM PROBIOTIK

ABSTRAK

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Tujuan penelitian ini adalah mempelajari viabilitas probiotik indigenus selama proses pengeringan beku, pembuatan es krim probiotik, dan penyimpanan es krim probiotik. Probiotik indigenus yang digunakan adalah *Lactobacillus plantarum* Mut-7 dan *Lactobacillus plantarum* T-3 serta digunakan *Lactobacillus plantarum* Dad-13 sebagai pembanding. Produksi sel probiotik menggunakan media pertumbuhan untuk bakteri asam laktat yang telah bersertifikat halal. Pada proses pengeringan beku, digunakan campuran susu skim dan sukrosa sebagai *cryoprotectant*. Viabilitas sel diamati pada tahap produksi sel, setelah pembekuan, dan setelah proses pengeringan beku. Kemudian, probiotik indigenus kering beku diaplikasikan pada es krim. Viabilitas sel probiotik indigenus pada es krim dianalisis selama proses pembuatan dan penyimpanan 2 bulan. Es krim probiotik juga diuji karakteristik fisik dan sensorisnya. Hasil penelitian menunjukkan bahwa viabilitas sel pada tahap pembekuan dan pengeringan beku tidak mengalami penurunan yang nyata pada ketiga probiotik indigenus tersebut. Bubuk probiotik kering beku yang dihasilkan mengandung $1,78 \times 10^{11}$ CFU/g; $2,77 \times 10^{11}$ CFU/g; dan $2,57 \times 10^{11}$ CFU/g untuk masing-masing *L. plantarum* Dad-13, *L. plantarum* Mut-7, dan *L. plantarum* T-3. Es krim probiotik dengan penambahan 0,01% (b/b) bakteri probiotik memiliki jumlah sel berkisar $5,33 \times 10^6 - 8 \times 10^6$ CFU/ml, sedangkan dengan penambahan 0,1% (b/b) berkisar $3,85 \times 10^7 - 6,75 \times 10^7$ CFU/ml. Selama penyimpanan 2 bulan, viabilitas dan pH es krim probiotik relatif tidak berubah. Produk es krim probiotik yang dihasilkan mempunyai karakteristik fisik dan sensoris yang tidak berbeda dengan es krim tanpa probiotik.

Kata kunci: viabilitas sel, probiotik indigenus, probiotik kering beku, es krim probiotik

VIABILITY OF INDIGENOUS PROBIOTIC IN FREEZE-DRYING AND PROBIOTIC ICE CREAM MAKING

ABSTRACT

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The aim of this research was to know the viability of indigenous probiotic during freeze-drying, probiotic ice cream making, and probiotic ice cream storage. Indigenous probiotic which used were *L. plantarum* Mut-7 and *L. plantarum* T-3, whereas *L. plantarum* Dad-13 as comparison. Production of probiotic cell used a growth medium for lactic acid bacteria which has been certified as halal. In freeze-drying, was used combination of skim milk and sucrose as cryoprotectant. Cell viability was observed at the cell production, after freezing, and after freeze-drying. After that, freeze-dried indigenous probiotic was applied to ice cream. Indigenous probiotic's cell was analyzed during ice cream making and 2 months storage. The physical and sensory characteristics of probiotic ice cream was also tested. The result showed that cell viability during freezing and freeze-drying was not reduced significantly, for these 3 isolates. Freeze-dried probiotics contain of $1,78 \times 10^{11}$ CFU/g; $2,77 \times 10^{11}$ CFU/g; dan $2,57 \times 10^{11}$ CFU/g for *L. plantarum* Dad-13, *L. plantarum* Mut-7, and *L. plantarum* T-3, respectively. Probiotic ice cream with addition of 0,01% (w/w) probiotic bacteria has cell number ranged from $5,33 \times 10^6 - 8 \times 10^6$ CFU/ml, meanwhile with the addition of 0,1% (w/w) it ranged from $3,85 \times 10^7 - 6,75 \times 10^7$ CFU/ml. During 2 months of storage, viability and pH of probiotic ice cream were stable. Physical and sensory characteristics of probiotic ice cream was not significantly different with non-probiotic ice cream.

Keyword: cell viability, indigenous probiotic, freeze-dried probiotic, probiotic ice cream