

Viability of bifidobacterium pseudocatenulatum G4 after spray-drying and freeze-drying

ABSTRACT

Viability of *Bifidobacterium pseudocatenulatum* G4 following spray-drying and freeze-drying in skim milk was evaluated. After spray-drying, the strain experienced over 99% loss in viability regardless of the air outlet temperature (75 and 85°C) and the heat-adaptation temperature (45 and 65 °C, 30 min). The use of heat-adaptation treatment to improve the thermotolerance of this strain was ineffective. On the other hand, the strain showed a superior survival at 71.65%–82.07% after freeze-drying. Viable populations of 9.319–9.487 log₁₀ cfu/g were obtained when different combinations of skim milk and sugar were used as cryoprotectant. However, the addition of sugars did not result in increased survival during the freeze-drying process. Hence, 10% (w/v) skim milk alone is recommended as a suitable protectant and drying medium for this strain. The residual moisture content obtained was 4.41% ± 0.44%.

Keyword: Bifidobacteria; Freeze-drying; Cryoprotectant; Spray-drying; Survival; Viability