

Influence of protective agents and storage conditions on cell viability of probiotic lactic acid bacteria, lactobacillus mendensis ca4

ABSTRACT

This study aims to evaluate the influence of protective agents on cell viability of *Lactobacillus mendensis* CA4 after freeze-drying process and during the storage at various temperatures. The protective agents used were skim milk, beef extract, soybean, and yeast extract at 10 % (w/v), respectively. Cell viability and survival rate were determined after the freeze-drying processes and during the storage at various temperatures (-20, 4 and 25 °C) up to 15 days. The residual moisture content and morphological of the freeze-dried samples were also analysed. Results show that after the freeze-drying, the highest cell survivability rate was recorded in skim milk (77.40%) followed by yeast extract (47.25%), and beef extract (42.86%) with cell viability at 2.07×10^6 , 9.83×10^5 , and 5.67×10^5 CFU/mL, respectively. All freeze-dried cells exhibited better survivability at storage condition -20 °C as compared to 4 and 25 °C. During storage, the cell viability in all protective agents were lower than 10^6 CFU/mL except for skim milk (1.12×10^6 CFU/mL) on the 10th day of storage at -20 °C. The cell viability of freeze-dried cells in skim milk was reduced to 6.33×10^5 CFU/mL at day 15th of storage at - 20 °C. Skim milk recorded the lowest moisture content (0.11%) with the highest survivability rate (77.40%), showing an inversed relationship. In future the findings of this study could be used to develop a potential formulation of protective agent for commercialization of probiotic and bioprotective cultures.tra