Milk evaluation as growth and cold preservation medium of a probiotic inoculum for young calves

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RESUMEN

Production of probiotic products requires preliminary research studies on technological characteristics of strains to verify the growth capacity of microorganisms and their survival rate and stability during storage. On an industrial scale production, it is important to lower the manufacturing cost by using inexpensive media both for propagation and preservation. The objective of the present study was to evaluate milk medium capacity to act as propagation matrix and cold preservation for a potential probiotic bacterial inoculum to be used in young calves bred in intensive systems. Bovine origin strains under study were Lactobacillus casei DSPV 318T, Lactobacillus salivarius DSPV 315T and Pediococcus acidilactici DSPV 006T. Strain propagation and preservation capacities were evaluated in 100 g L-1 skim milk powder and de Man, Rogosa and Sharpe medium (MRS) as positive control. Cultures were stored at refrigerated (4°C) and freezing (-20°C) conditions and their viabilities rates were recorded every 21 days for a 3-months period and on months 6, 9 and 12 (180, 270 and 360 days). Biomass production and counts of cell viabilities were done in decimal dilutions in Ringer 1/4 solution and spread in MRS agar dishes. The 3-studied Lactic Acid Bacteria (LAB) were able to propagate in milk medium. This inoculum preservation, with bacterial counts higher than the Suggested Minimum Level (SML) (106 CFU Ml-1) in milk medium, was feasible when it was stored under refrigerated conditions for 84 days and in freezing conditions for 360 days. Manufacturing cost could be substantially reduced if the same medium could be successively used in both, propagation and conservation processes, modifying only the physical conditions.

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