

The Viability of Lactic Acid Bacteria and *Bifidobacterium bifidum* in Yoghurt Powder During Storage[†]

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ABSTRACT

The purpose of this research was to investigate the survival of three different species of lactic acid bacteria and Bifidobacterium bifidum in yoghurt powder during 4 weeks of storage at room and refrigerator temperatures. Fresh yoghurt was prepared from 42.9% (w/w) cow milk, 42.9% (w/w) goat milk, 7.0% (w/w) skim-milk powder, 5.0% (w/w) sugar, 0.2% (w/w) carrageenan, 1.0% (w/w) yoghurt starter culture that was composed of Streptococcus thermophilus and Lactobacillus bulgaricus, 0.5% (w/w) Lactobacillus acidophilus and 0.5% (w/w) Bifidobacterium bifidum and incubated at 42±1°C until the pH of the yoghurt reached a value of 4.6. The fresh yoghurt was dried using a spray drier, followed by packing in PET/PP/Al or nylon/PE packaging. The yoghurt powder was stored at either room or chilled temperature and analyzed every 2 weeks for its chemical and microbial properties. The data showed that lactic acid bacteria and B. bifidum were significantly reduced for up to 4.65 log cfu/g after the drying process. Further reduction in the number of these microorganisms mainly occurred within the first 2 weeks of storage, particularly for B. bifidum. Keeping the yoghurt powder at low storage temperature generally improved the survival of the target microorganisms. Except for L. bulgaricus, the survival of other studied microorganisms was slightly better in PET/PP/Al compared to those in nylon/PE. The pH of the yoghurt powder did not significantly change during the storage period whereas the water activity and moisture content of the yoghurt powder packed in the nylon/PE increased during storage, particularly when the powder was stored at ambient temperature.

Key words: Spray-dried yoghurt, Yoghurt starter culture, Probiotic bacteria, Storage viability

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