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

Tri I. Wirjantoro* and Aphirak Phianmongkhol

Department of Food Science and Technology, Faculty of Agro-Industry, Chiang Mai University, Chiang Mai 50100, Thailand

*Corresponding author. E-mail: tri@chiangmai.ac.th

**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

†This paper was presented at IDF International Symposium on Revolution in Food Safety Management, 13-15 February 2008 in Bali, Indonesia.