

Biochemical and Microbiological Studies of Different Probiotic Yogurts Stored at Different Temperatures

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Background & Objectives: In this research, the survival of probiotic microorganisms in yogurts stored at room temperature (cold chain interruption conditions) was studied.

Methods: Milk inoculated with yogurt bacteria (mixed culture of *Streptococcus thermophilus* and *Lactobacillus delbrueckii* ssp. bulgaricus) and a single probiotic culture (*L. acidophilus* LA-5 or *Bifidobacterium lactis* Bb-12 or *L. rhamnosus* HN001 or *L. paracasei* Lpc-37) were incubated till pH of 4.5 was reached. Probiotic yogurts were stored at two different temperatures including cold (control) or room temperatures (5 and 20°C, respectively). Changes in pH decrease, titrable acidity increase and redox potential increase as well as the viability of probiotics per 6-hour intervals during an assumptive interrupted cold storage (24 h) were monitored.

Results: The survival of probiotics was strongly dependent on the storage temperature and remarkable viability loss occurred in room temperature compared to refrigerated sotrage. Also, the survivability was dependent on probiotic strain. Among our experimental strains, *B. lactis* Bb-12 showed the less resistance to be stored at 20°C (24 h).

Conclusion: Referring to the recommended minimum numbers of 10⁷ cfu.ml⁻¹, *L. rhamnosus* HN001 was the most suitable probiotic strain to use in probiotic yogurts especially in countries having high possibility of cold chain interruption during storage.

Keywords: Bifidobacteria; Lactobacillus; Probiotic; Room Temperature; Viability