CELL VIABILITY AND IMMUNOSTIMULATING AND PROTECTIVE CAPACITIES OF BIFIDOBACTERIUM LONGUM 51A ARE DIFFERENTIALLY AFFECTED BY TECHNOLOGICAL VARIABLES IN FERMENTED MILKS

Tássia C. Souza1, M. Florência Zacarías2, Andréia M. Silva3, Patricia Burns2, Ana Binetti2, Jorge Reinheimer2, Jacques R. Nicoli1 and Gabriel C. Vinderola2

1Departamento de Microbiologia, Instituto de Ciências Biológicas, Universidade Federal de Minas Gerais, Belo Horizonte, MG, Brazil
2Instituto de Lactologia Industrial (INLAIN, UNL–CONICET), Facultad de Ingeniería Química, Universidad Nacional del Litoral, Santa Fe, Argentina
3Campus Sete Lagoas, Universidade Federal de São João del Rei, Sete Lagoas, MG, Brazil

The control of cell viability is routinely used in the food industry as functional criterion. However, health benefits are also, at least in part, recognized to non-viable cells. Therefore, it is necessary to control the microbiological and technological variables involved in food production that might alter the functionality of a strain in a particular food matrix. The present work investigated the cell viability of Bifidobacterium longum 51A in fermented milks and studied its immuno-stimulating and protective capacities against Salmonella enterica serovar Typhimurium infection in mice. B. longum 51A was added to milk fermented with different yoghurt starter cultures, before or after fermentation, and viability was monitored during storage (5°C, 28 days). Resistance to simulated gastric acid digestion was assessed. Oral administration of fermented milks during 10 days was followed by oral infection with S. Typhimurium. The number of IgA+ cells in the intestines was determined before infection. Survival to infection was monitored for 20 days. B. longum 51A lost viability during storage, but the product was effective for the induction of IgA+ cells proliferation in the gut and for the protection of mice against S. Typhimurium infection. Therefore, the cell viability of B. longum 51A in fermented milks along storage did not interfere on the probiotic capacity of the bifidobacteria. The uncoupling of cell viability and functionality demonstrated that, in certain cases, non-viable cells can also exert positive effects.

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