

Biopreservation by bacteriocinogenic lactic acid bacteria in the control of *Listeria monocytogenes* in fresh cheese**Svetoslav Dimitrov Todorov**

Universidade Federal de Viçosa, Brazil

It is well known that many lactic acid bacteria (LAB) are capable of producing a variety of antimicrobial compounds, which may contribute to their colonization of habitats and their competitive advantage over other bacteria. Besides production of lactic acid, which causes a drop in pH enough to inhibit certain strains, as its non-dissociated form triggers a lowering of the internal pH in sensitive bacteria that causes a collapse in the electrochemical proton gradient resulting in a bacteriostatic or bactericidal effect, LAB can produce other organic acids, diacetyl, hydrogen peroxide, and bacteriocins. *Listeria monocytogenes* is a pathogen frequently found in dairy products. Its control in fresh cheeses is difficult, due to the psychrotrophic properties and salt tolerance. Bacteriocinogenic LAB with proven *in vitro* antilisterial activity can be an innovative technological approach but their application needs to be evaluated by means of *in situ* tests. In addition, application of bacteriocinogenic strains for dairy product preservation is in agreement with consumers' demands for foods that are naturally preserved. Several strains of *Lactococcus* spp and *Enterococcus* spp are capable of producing bacteriocins with antimicrobial activity against important bacterial pathogens in dairy products. The bacteriocins produced by *L. lactis* subsp. *lactis* DF04Mi and two *Enterococcus* strains (*E. mundtii* CRL35 and *E. faecium* ST88Ch), isolated from milk and cheeses, were characterized and tested for their capability to control growth of *Listeria monocytogenes* in experimentally contaminated fresh Minas cheese during refrigerated storage. Studied strains were active against a variety of pathogenic and non-pathogenic microorganisms and their auto-aggregation and co-aggregation with several *Listeria monocytogenes*, *Enterococcus faecalis* ATCC 19443 and *Lactobacillus sakei* ATCC 15521 varied according to the strain and the testing conditions (pH, temperature, presence of salts and surfactants). Growth of *L. monocytogenes* was inhibited in cheeses containing *E. mundtii* CRL35 up to 12 days at 8°C, evidencing a bacteriostatic effect. *L. lactis* subsp. *lactis* DF04Mi and *E. faecium* ST88Ch was less effective, as the bacteriostatic effect occurred only after six days at 8°C. In cheeses containing nisin (12.5 mg/kg), less than one log reduction was observed. This research underlines the potential application of *E. mundtii* CRL35 in the control of *L. monocytogenes* in Minas cheese.

slavi310570@abv.bg