

Characterization of lactic acid bacteria isolated from infant faeces as potential probiotic starter cultures for fermented sausages

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Abstract

A total of 109 lactic acid bacteria isolated from infant faeces were identified by partial 16S rRNA, *cpn60* and/or *pheS* sequencing. *Lactobacillus* was the most prevalent genus, representing 48% of the isolates followed by *Enterococcus* (38%). *Lactobacillus gasseri* (21%) and *Enterococcus faecalis* (38%) were the main species detected. A further selection of potential probiotic starter cultures for fermented sausages focused on *Lactobacillus* as the most technologically relevant genus in this type of product. Lactobacilli strains were evaluated for their ability to grow *in vitro* in the processing conditions of fermented sausages and for their functional and safety properties, including antagonistic activity against foodborne pathogens, survival from gastrointestinal tract conditions (acidity, bile and pancreatin), tyramine production, antibiotic susceptibility and aggregation capacity. The best strains according to the results obtained were *Lactobacillus casei/paracasei* CTC1677, *L. casei/paracasei* CTC1678, *Lactobacillus rhamnosus* CTC1679, *L. gasseri* CTC1700, *L. gasseri* CTC1704, *Lactobacillus fermentum* CTC1693. Those strains were further assayed as starter cultures in model sausages. *L. casei/paracasei* CTC1677, *L. casei/paracasei* CTC1678 and *L. rhamnosus* CTC1679 were able to lead the fermentation and dominate (levels *ca.* 10⁸ CFU/ g) the endogenous lactic acid bacteria, confirming their suitability as probiotic starter cultures.