

Potentially probiotic and bioprotective lactic acid bacteria starter cultures antagonise the *Listeria monocytogenes* adhesion to HT29 colonocyte-like cells

Beneficial Microbes (2015) 6, 337-343

Margarita Garriga¹, Raquel Rubio¹, Teresa Aymerich¹, Patricia Rúas-Madiedo^{2,*}.

¹ IRTA, Monells, Finca Camps i Armet, E-17121 Monells, Girona, Spain.

² CSIC, IPLA, Paseo Rio Linares S-N, Villaviciosa 33300, Asturias, Spain.

* Corresponding author: ruas-madiedo@ipla.csic.es

Abstract

The capability of five lactic acid bacteria (LAB) to counteract the adhesion of *Listeria monocytogenes* to the epithelial intestinal cell line HT29 was studied. The highest adhesion ability to HT29 was achieved by the intestinal strain *Lactobacillus rhamnosus* CTC1679, followed by the meat-derived strains *Lactobacillus sakei* CTC494 and *Enterococcus faecium* CTC8005. Surprisingly, the meat strains showed significantly better adhesion to HT29 than two faecal isolates of *Lactobacillus casei* and even significantly higher than the reference strain *L. rhamnosus* GG. Additionally, the anti-listerial, bacteriocin-producer starter culture *L. sakei* CTC494 was able to significantly reduce the adhesion of *L. monocytogenes* to HT29 in experiments of exclusion, competition and inhibition. The performance was better than the faecal isolate *L. rhamnosus* CTC1679. Our results reinforce the fact that the ability of LAB to interact with a host epithelium model, as well as to antagonise with foodborne pathogens, is a strain-specific characteristic. Additionally, it is underlined that this trait is not dependent on the origin of the bacterium, since some food LAB behave better than intestinal ones. Therefore, the search for novel strains in food niches is a suitable approach to find those with potential health benefits. These strains are likely pre-adapted to the food environment, which would make their inclusion in the formulation of probiotic foods more feasible.