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The non-pathogenic *Listeria innocua* as a good surrogate of the pathogenic *L. monocytogenes* in field experiments aiming to clarify persistent cheese dairies colonization

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Listeria monocytogenes is foodborne pathogenic bacteria that cause human listeriosis, a severe zoonotic disease, with high morbidity, hospitalization and lethality rates in vulnerable populations. *L. monocytogenes* is known to be a concern in the production of cheese. The production environment is often pointed out as a possible transmission route of the microorganism and the persistence of some molecular types has been described. Field experiments under actual dairy processing conditions are welcomed by the industry and the use of an appropriate non-pathogenic surrogate for *L. monocytogenes* in this kind of experiments is necessary. The present study aimed to investigate whether *L. innocua* may be used as a surrogate of *L. monocytogenes* in dairy processing environment experiments. 10 persistent and non-persistent isolates of *L. innocua* and *L. monocytogenes* collected from cheese processing plants were used to compare biofilm-forming ability and biofilm susceptibility to two in use hydrogen peroxide (HP) based disinfectants. No significant differences in biofilm-forming ability by these two species was observed ($P > 0.05$). In a similar way, the susceptibility to HP disinfectants of the *L. monocytogenes* and *L. innocua* biofilms formed by persistent and non-persistent isolates, grown in clean and in dirty conditions, showed no significant differences ($P > 0.05$). By PCA an initial 10-dimensional space (10 variables) was reduced to a plane F1F2 defined by the two first principal components. The projection of the different isolates in this plane showed that they could be clustered into two major groups; both include isolates from the two species (Fig.1). This study proved the suitability of *L. innocua* as an indicator of *L. monocytogenes* in *Listeria* control programs and as a surrogate in field experiments aiming to clarify the factors that contribute to *L. monocytogenes* persistent colonization of some cheese processing plants.

Biography

Luisa Brito is an Assistant Professor at University of Lisbon. She has been Supervisor of several undergraduate, master and doctoral theses, responsible for research projects and author or co-author of several national and international publications. She develops research on pathogenic food-borne bacteria. Some of these studies involve proteomic, transcriptomic and phenotypic analysis of planktonic and biofilm cells. The use of lactic acid bacteria, with probiotic characteristics, in the attenuation of the virulence of these pathogens, is another area of research. This area is related with the development of new and healthier food based on the fermentation of underexplored fruit and vegetables materials, like commercial misshapen or under-sized items as well as by-products of fruit and vegetable industry, with high content in functional compounds.

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