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New perspective to improve *Lactobacillus paracasei* functionality in cheese

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A growing interest has risen toward technologies able to enhance the potential of probiotic strains. High pressure homogenization (HPH) represents one of the most studied opportunities for the dairy field. Aim of this research was to consider the potential of HPH, performed at 50 MPa, on the probiotic *Lactobacillus paracasei*A13 performances, co-inoculated with the traditional starters, for the production of Caciotta cheese. Three types of Caciotta were manufactured: type 1 (control, with the traditional starters), type 2 (Caciotta with not-HPH treated *Lactobacillus paracasei*A13), type 3 (Caciotta with HPH-treated *Lactobacillus paracasei* A13). The three types were stored at 4°C. Viability of starters and *Lb. paracasei*A13 as well as cheese proteolytic and lipolytic patterns were monitored after cheese making and 1, 2, 3, 4, 5 weeks. Physicochemical and organoleptic analyses, at the same time of storage, were carried out. Moreover, the *Lactobacillus paracasei* A13 gastric acid resistance was monitored over ripening both in cheese 2 and 3. Also the modulation of mice immune system was evaluated after feeding with cheese added of HPH and not-HPH treated strain.

The probiotic maintained high viability (9.2 and 9.1 log cfu/g) up to the 14th day of storage in both the Caciotta types. The electrophoretic analyses underlined a faster proteolysis in Caciotta cheese containing HPH-treated strain with respect to cheese types 1 and 2. Regarding the functional properties, the HPH treatment at 50 MPa increased *Lb. paracasei* gastric resistance in Caciotta, maintaining high strain viability in the product, and contributed to the positive modulation of the mice immune system.

Biography

Francesca Patrignani completed her PhD in Food Biotechnology in 2004 at the University of Bologna, Italy. She was guest researcher at the BFE, Karlsruhe Germany, and at the Industrial Dairy Institute of Santa Fe, Argentina. Actually she has a post-doc position at the University of Bologna, where she is involved in several research activities regarding: i) study of high pressure homogenization for the treatment of several fluid food matrixes ii) functional characterization of LAB from food source and iii) study of microbial cell responses to sub-lethal stresses.

Francesca Patrignani has published 30 papers and realized 40 presentations to international symposia.

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