



Name of Research Team: INIA-CSIC

Brief description: Our research activities mainly aim to improve the quality of dairy products. We investigate different strategies to prevent microbiological defects and extend the shelf life of dairy foods, especially focused on biopreservation. We use lactic acid bacteria producing antimicrobial compounds *in situ* (bacteriocins or reuterin), and bacteriophages that infect cheese spoilage microorganisms and phage lytic enzymes (endolysins).

Group Members: Researchers: Sonia Garde López-Brea and Marta Ávila Arribas.
Technical staff: Javier Calzada Gómez and Carmen Sánchez López.

Research topics:

- Biocontrol of spoilage microorganisms in dairy products using natural antimicrobials (bacteriocins, reuterin, bacteriophages and their endolysins).
- New technologies and microorganisms for improving the ripening and development of the sensory properties in dairy and meat products.

Recent articles

- Garde S, Calzada J, Sanchez C, Gaya P, Narbad A, Meijers R, Mayer MJ, Avila M (2020). Effect of *Lactococcus lactis* expressing phage endolysin on the late blowing defect of cheese caused by *Clostridium tyrobutyricum*. Int. J. Food Microbiol. 329: 108686.
- Ávila M, Gómez-Torres N, Delgado D, Gaya P, Garde S (2020). Effect of a nisin-producing lactococcal starter on the late blowing defect of cheese caused by *Clostridium tyrobutyricum*. Int. J. Food Sci. Technol. 55: 3343-3349.

- Gómez-Torres N, Ávila M, Narbad A, Mayer MJ, Garde S (2019). Use of fluorescent CTP1L endolysin cell wall-binding domain to study the evolution of *Clostridium tyrobutyricum* during cheese ripening. *Food Microbiol.* 78: 11-17.
- Gómez-Torres N, Dunne M, Garde S, Meijers R, Narbad A, Ávila M, Mayer MJ (2018). Development of a specific fluorescent phage endolysin for *in situ* detection of *Clostridium* species associated with cheese spoilage. *Microb. Biotechnol.* 11: 332-345.
- Ávila M, Gómez-Torres N, Delgado D, Gaya P, Garde S (2017). Industrial-scale application of *Lactobacillus reuteri* coupled with glycerol as a biopreservation system for inhibiting *Clostridium tyrobutyricum* in semi-hard ewe milk cheese. *Food Microbiol.* 66: 104-109.

Research projects

- RTA2015-00018-C03-01 (2017-2021) Biocontrol de *Clostridium* en queso mediante el empleo de bacteriófagos. Principal Investigator: Sonia Garde López-Brea.

Doctoral Thesis

Gómez Torres, Natalia (2017). Control of *Clostridium* spp. and prevention of late blowing defect of cheese by antimicrobial-producing lactic acid bacteria, high pressure and phage endolysins. *Summa cum laude*. Fisher Scientific Award for the best Doctoral Thesis in Food Microbiology in 2018 (Spanish Society of Microbiology).

URL de la página del grupo en su institución: <https://www.inia.es/en-en/Research/Food/Calidad/tecnologiaproductoslacteoscarnicos/Paginas/Home.aspx>