

Special Issue on Applied Microbiology in Food Technology

Ester Betoret * and Noelia Betoret * 

Institute of Food Engineering for Development, Universitat Politècnica de València, 46022 Valencia, Spain

* Correspondence: ester_betoret@hotmail.com (E.B.); noebeval@tal.upv.es (N.B.)

Food science and technology plays a very important role in designing and developing new foods, and in improving the safety, nutritional and organoleptic quality of processed foods.

The strong link between microbiology and food technology has been increasing in recent years. This has mainly been motivated by the capacity of some microorganisms to contribute to sustainable food preservation and the beneficial effect of the so-called probiotics in maintaining good health and well-being.

Fermentation was introduced thousands of years ago to facilitate food preservation. Although it was traditionally carried out spontaneously from the native microorganism in the raw material, in recent years, the addition of some starters has been favoured. The use of a specific microbiological specie as an inoculum can greatly reduce the effects of spoilage microorganisms, inhibit the growth in pathogenic microorganisms, and control the process, reducing the time needed and improving the sensory and hygienic quality of the final product. In addition, the use of starters can lead to a final product with a specific health effect and can drive the selection and development of new probiotics. In this area, the implementation of new techniques for microbial population screening is a research challenge: precise but time-saving techniques are needed. A novel approach based on well-established and affordable techniques, accompanied by a simple bioinformatics analysis, has been used to compare the diversity of *Lactococcus* phages from dairy industrial and spontaneous fermentation processes [1].

In addition, the identification of secondary metabolites with antimicrobial properties and potential use as a preservative in processed foods is of great interest to the food industry. Specific metabolites produced by *Lactocaseibacillus rhamnosus*, *Levilactobacillus brevis* and *Lactiplantibacillus plantarum* and their potential antimicrobial activity against common food pathogens have been investigated by Vougiouklaki et al. [2].

Furthermore, traditional fermented foods have long been recognized by various communities to be good for health. Although the mechanisms by which fermented foods can contribute to maintaining good health and preventing numerous illnesses remain unclear, technological developments and research on this topic are shedding new light on this field. Some of the previously identified reasons for this are that some microorganisms can improve the digestibility of macronutrients, help to improve the diversity of the gut microbiota and strengthen the immune system, and produce secondary metabolites with a beneficial effect on health. In this context, a more contemporary scientific and technical evaluation of the use probiotics as a functional food is being implemented [3]. This evaluation requires assessing their survival through the gastrointestinal tract using agreed in vitro colonic digestion models [4] and progressing the application of technologies and food matrix features to improving their resistance and viability [5]. Moreover, identifying novel probiotics from foods such as breast milk [6] is a challenge.

Funding: This research received no external funding.

Acknowledgments: Thanks to all the authors and peer reviewers for their valuable contributions to this Special Issue 'Applied Microbiology in Food Technology'. We would also like to express our gratitude to all the staff and people involved in this Special Issue.



Citation: Betoret, E.; Betoret, N. Special Issue on Applied Microbiology in Food Technology. *Appl. Sci.* **2022**, *12*, 9559. <https://doi.org/10.3390/app12199559>

Received: 20 September 2022

Accepted: 22 September 2022

Published: 23 September 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



Copyright: © 2022 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Olejnik-Schmidt, A.; Pietrzak, B.; Kawacka, I.; Malak, K.; Wawrzyniak, W.; Schmidt, M. A Simple Method for Assessing Diversity and Dynamics of Microbial Community: Comparison of Dairy Phages from Industrial and Spontaneous Fermentation. *Appl. Sci.* **2021**, *11*, 8915. [[CrossRef](#)]
2. Vougiouklaki, D.; Tsironi, T.; Papaparaskevas, J.; Halvatsiotis, P.; Houhoula, D. Characterization of *Lacticaseibacillus rhamnosus*, *Levilactobacillus brevis* and *Lactiplantibacillus plantarum* Metabolites and Evaluation of Their Antimicrobial Activity against Food Pathogens. *Appl. Sci.* **2022**, *12*, 660. [[CrossRef](#)]
3. Palanivelu, J.; Thanigaivel, S.; Vickram, S.; Dey, N.; Mihaylova, D.; Desseva, I. Probiotics in Functional Foods: Survival Assessment and Approaches for Improved Viability. *Appl. Sci.* **2022**, *12*, 455. [[CrossRef](#)]
4. Veintimilla-Gozalbo, E.; Asensio-Grau, A.; Calvo-Lerma, J.; Heredia, A.; Andrés, A. In Vitro Simulation of Human Colonic Fermentation: A Practical Approach towards Models' Design and Analytical Tools. *Appl. Sci.* **2021**, *11*, 8135. [[CrossRef](#)]
5. Hinestroza-Córdoba, L.; Betoret, E.; Seguí, L.; Barrera, C.; Betoret, N. Fermentation of Lulo Juice with *Lactobacillus reuteri* CECT 925. Properties and Effect of High Homogenization Pressures on Resistance to In Vitro Gastrointestinal Digestion. *Appl. Sci.* **2021**, *11*, 10909. [[CrossRef](#)]
6. Nikolopoulou, G.; Tsironi, T.; Halvatsiotis, P.; Petropoulou, E.; Genaris, N.; Vougiouklaki, D.; Antonopoulos, D.; Thomas, A.; Tsilia, A.; Batrinou, A.; et al. Analysis of the Major Probiotics in Healthy Women's Breast Milk by Realtime PCR. Factors Affecting the Presence of Those Bacteria. *Appl. Sci.* **2021**, *11*, 9400. [[CrossRef](#)]