



XVI CONGRESO ANUAL DE BIOTECNOLOGÍA

BADAJOZ, 12, 13 Y 14 DE JULIO DE 2023



Libro de Resúmenes. XVI
Congreso de la
Federación Española de
Biotecnólogos
Congreso Anual de
Biotecnología.

Badajoz, 12-15 de julio de
2022

Edita

Federación Española de
Biotecnólogos
Campus de Vegazana s/n
24071 – León

Coordinadores

Marta Meireles da Silva Gil
Fernando A. Blanco
Cuéllar

Editores

Benjamín Vázquez Conejo
Elena Franganillo Tena

Diseño y Maquetación

Elena Franganillo Tena

ISBN

978-84-09-52652-9

Selection of potential probiotic lactic acid bacteria isolated from Spanish fermented foods

Authors: Irene Martín^{1,2}, Joana Barbosa², Juan J. Córdoba¹, Paula Teixeira²

Center/University: 1 Higiene y Seguridad Alimentaria. Instituto de Investigación de Carne y Productos Cárnicos (IProCar), Facultad de Veterinaria, Universidad de Extremadura, Avda. de las Ciencias s/n, 10003, Cáceres, Spain. 2. Universidade Católica Portuguesa, CBQF – Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Diego Botelho 1327, 4169-005, Porto, Portugal

Fermented foods are products with an autochthonous microbiota which confers characteristic sensory attributes and plays a role in their preservation by the production of inhibitory compounds [1]. This autochthonous microbiota, composed mainly of lactic acid bacteria (LAB), also has interesting probiotic and functional properties. Probiotics are live microorganisms which when administered in adequate amounts could confer a health benefit to the host [2]. Their consumption has several beneficial effects, including balancing of colonic microbiota, protection of the normal intestinal microbiota and prevention of gastrointestinal disorders, reduction of serum cholesterol, antagonism against food-borne pathogens and improvement in the nutritional value of foods [3].

The objective of this work was to evaluate several LAB strains isolated from dry-cured fermented meat products and ripened cheese for potential use as probiotic strains, concerning their safety, antimicrobial and functional activities. For this purpose, 33 LAB strains obtained from Spanish fermented products were studied regarding the presence of virulence factors and genes, susceptibility to antibiotics, antimicrobial activity against different spoilage and pathogens bacteria, survival during simulated gastrointestinal tract (GIT) passage and adhesion to intestinal epithelium.

Comunicación oral 07

Resúmenes expoBAC

Despite the production of proteinaceous compounds inhibiting several pathogens by all the LAB strains analyzed, only five strains were selected due to the absence of virulence factors and genes and antibiotic resistance: *Lactilactobacillus sakei* 205 and 197 (isolated from dry-cured fermented sausages), *Lacticaseibacillus casei* 116 and 31 and *Lactococcus garvieae* 151 (isolated from ripened cheeses).

With this study, five strains from three species were found as potential candidates for future use as protective and probiotic strains in fermented foods. Further tests should be performed to evaluate their beneficial effects when incorporated into fermented food matrices during their shelf life.

Keywords

probiotic, lactic acid bacteria, gastrointestinal tract, Caco-2

References

1. Leeuwendaal, N. K., Stanton, C., O'Toole, P. W., Beresford, T.P. (2022). Fermented foods, health and the gut microbiome. *Nutrients*, 14(7): 1527.
2. Food and Agriculture Organization/World Health Organization (2002). Guidelines for the Evaluation of Probiotics in Food: Report of a Joint FAO/WHO Working Group on Drafting Guidelines for the Evaluation of Probiotics in Food. London, ON, Canada.
3. Misra, S., Mohanty, D., Mohapatra, S. (2019). Applications of Probiotics as a Functional Ingredient in Food and Gut Health, *Journal of Food and Nutrition Research*, 7, 213–223.

Acknowledgements

The authors thank the scientific collaboration under the Fundação para a Ciência e a Tecnologia (FCT) project UIDP/00329/2020. Also thank the projects RTA-2017-00027-C03-03 funded by MCIN/AEI/10.13039/501100011033 and grants IB16149 and GR21130 funded by Junta de Extremadura and by "European Union ERDF A way of making Europe". I. Martín has received a postdoctoral fellowship Margarita Salas (MS-13) funded by Ministerio de Universidades and European Union NextGenerationEU.

Comunicación oral 07

Resúmenes expoBAC