



Selection of Lactic Acid Bacteria with probiotic potential to use in the manufacture of functional foods

Poster

Microbiología de Alimentos

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Current lifestyle changes, including improper nutrition, physical inactivity, and other unhealthy habits, are promoting an increase in the prevalence of non-infectious chronic diseases, such as diabetes, obesity and cardiovascular diseases, which are the leading causes of death worldwide [1, 2].

In order to address and reverse this critical situation, international health organisations have recommended implementing changes to dietary habits, including the incorporation of functional foods into the diet. These foods are defined as natural or processed foods that contain biologically active compounds, which have been shown to provide documented health benefits and/or may reduce the risk of non-infectious diseases by providing benefits in addition to the nutritional properties of the food itself [3].

The use of lactic acid bacteria (LAB) in the production of functional foods has gained popularity because of their beneficial properties. This study aimed to evaluate 12 LAB strains, belonging to *Lactiplantibacillus* (Lp.) *plantarum*, *Levilactobacillus* (Lv.) *brevis*, *Lactobacillus* (Lact.) *acidophilus*, *Lact. delbrueckii* and *Lacticaseibacillus* (Lc.) *paracasei* species, to determine their health-promoting properties and select the most suitable

candidate to produce a synbiotic yogurt. The strains underwent assessment for their resistance to phenol, the capacity to remove cholesterol, the phenolic content, and the antioxidant, α -glucosidase inhibitory, and *in vitro* angiotensin-I-converting enzyme (ACE) inhibitory activities. Finally, the strains showing the best properties were assayed for their immunomodulatory properties, because it represents a promising approach for enhancing immunological responses to diseases, including infectious and inflammatory ones.

Lactobacillus acidophilus UCLM-104 exhibited noteworthy antioxidant and cholesterol-removal capabilities, while *Lc. paracasei* UCLM-41 demonstrated the highest phenolic content and the most effective outcomes in phenol resistance and *in vitro* angiotensin-converting enzyme (ACE) inhibition assays. Furthermore, both strains were found to reduce inflammation. These results suggest that they are promising probiotics, presenting interesting antioxidant, antidiabetic, antihypertensive and anti-inflammatory properties, and being even better than the commercial probiotic strains used as a control. Consequently, they are an excellent option for producing symbiotic yoghurts.

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[2] World Health Organization (WHO) (2022).

[3] Gul K, Singh AK, Jabeen R (2016). Crit Rev Food Sci Nutr 56:2617-2627. <https://doi.org/10.1080/10408398.2014.903384>

Palabras Clave

(1) Functional foods, (2) health benefits, (3) lactic acid bacteria, (4) synbiotics, (5) immunomodulation.

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