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### ENHANCING GUT HEALTH AND LONGEVITY THROUGH NOVEL STARTER CULTURES IN FERMENTED PRODUCTS

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For nearly 10,000 years, fermented foods have been essential to the human diet, boasting a significant variety today. The health advantages of fermented foods have been recognized for a long time. These benefits may result from direct interactions of ingested live microorganisms with the host, as a probiotic effect. They may also come indirectly as a result of the ingestion of microbial metabolites synthesized during fermentation. Research suggests that probiotics found in dairy products have positive effects on human health. In recent years, there has been extensive research into the use of starter cultures with probiotic characteristics to address various health conditions. A Western-type diet characterized by a high daily intake of saturated fats and refined carbohydrates leads to the accumulation of a wide variety of molecular and cellular damages over time, leading to several age-related diseases. According to the World Health Organization, the number of people worldwide over 60 years of age was estimated to be 1 billion in 2019, with an expected increase to 2.1 billion by 2050. The increasing number of the elderly population will be accelerated in the coming decades, particularly in developing countries, such as Serbia. We have tested several carefully selected natural isolates of lactic acid bacteria, originating from artisanal dairy products from specific geographical locations in the Balkan peninsula for the ability to decelerate the cell-aging process. Our results revealed that these strains possess exciting probiotic features such as strengthening the epithelial intestinal barrier through stimulation of autophagy, upregulating the tight junctions between the epithelial cells of the intestine which prevent the passage of harmful substances from the intestine to other organs, activating the antimicrobial defense, and extending the lifespan of *Caenorhabditis elegans* via autophagy activation, making them great candidates for probiotic starter cultures for functional dairy food.

*Keywords: probiotic, starter cultures, functional food, fermented products, age-related diseases*

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