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A MOLECULAR STUDY ON THE GUT SURVIVAL PROPERTIES OF BULGARIAN AMYLOLYTIC LACTOBACILLUS PLANTARUM STRAINS

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Consumers' trend towards employing functional foods to achieve better quality of life and the insights on the health properties of cereals opened a new field for functional food development through combining the valuable composition of cereals and the health-promoting properties of probiotic lactic acid bacteria (LAB). LAB with amylolytic properties can assimilate starch in a single step process and could successfully be applied as starter cultures for the efficient nutritional conversion of cereal matrices into healthy foods. Amylolytic lactic acid bacteria are quite rare, and the probiotic potential of such strains has not been investigated so far. The first step of probiotic screening aim is to assess the ability of the strains to survive the passage through the gastro-intestinal tract (GIT). The present study focused on the molecular screening of five *amylolytic Lactobacillus plantarum* strains for genes coding tolerance to high acid and bile salts concentrations as basic GIT survival characteristics for the selection of probiotic bacteria strains. In vitro tests for acid and bile tolerance were also performed to test the expression of the genes under the effect of two factors – growth stage of the culture and available carbon source in the medium (glucose or starch). Results showed excellent correspondence between the genetic screening and the phenotypic tests performed. Survivability at high acidity and bile salts presence was strain-specific, with significant positive effect observed for cultures in stationary phase compared to those in exponential phase. Effect of starch in the medium proved most important to ensure viability of the amylolytic strains, which reveals the excellent potential of amylolytic lactic acid bacteria for commercially-relevant probiotic applications. Among the five tested strains, *L. plantarum* Bom2 showed the best probiotic potential.

Biography

Velitchka G Gotcheva is an Associate Professor at the Department of Biotechnology and the Centre for Food Quality and Safety, University of Food Technologies, Plovdiv, Bulgaria. She has completed her PhD studies on Functional Foods in 2003 at the same university. Her teaching and research activities are focused on functional food development, food biotechnology, food safety, food quality management systems, food legislation and labelling, food authenticity. She has expertise in food microbiology, food biotechnology and molecular methods at the University of Manchester (UK), University of Vermont and Texas A & M University (USA), and China National Research Institute of Food and Fermentation Industries. She has also worked with food and biotechnology companies and with the Quality Management Certification sector. She has participated in a number of researches, educational and networking projects. She is a member of the Management Board of the ISEKI Food Association (IFA) and the representative of Bulgaria at IFA.

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