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ABSTRACTS BOOK



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NEW LACTIC ACID BACTERIA STRAINS ISOLATED FROM ARMENIAN TRADITIONAL DAIRY PRODUCTS WITH GREAT POTENTIAL FOR DAIRY PRODUCTION

Y. Simonyan ^{1,*}, A. Keryan ¹, I. Bazukyan ¹, A. Trchounian ¹¹Department of Microbiology, Plants and Microbes Biotechnology, Faculty of Biology, Yerevan State University, Yerevan, Armenia

Abstract Content: Traditional dairy products are an important source of novel and highly potent lactic acid bacteria (LAB) strains with great practical potential. LAB expressing antimicrobial activity are particularly promising for use as biopreservatives, probiotics and more. Moreover, fermentation of milk with proteolytic LAB may further increase their antimicrobial potential liberating antimicrobial peptides from milk.

The purpose of this study was to isolate LAB with antimicrobial and proteolytic activity from Armenian traditional dairy products.

Samples obtained from different regions of Armenia were plated into skim-milk agar. Proteolytic activity was evaluated by sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). Antimicrobial activity was studied by agar well diffusion assay.

From 114 isolated strains only 13 produced hydrolysis zones in skim-milk agar plates. However, SDS-PAGE analysis demonstrated that only seven strains have significant ability of hydrolyzing β -casein. All seven strains had PIII type proteinases. No strain was able to hydrolyze whey and soybean proteins. All seven strains expressed antimicrobial activity against *Micrococcus luteus* and *Salmonella typhimurium*, when grown in MRS, while only two strains expressed antimicrobial activity when cultivated in skim-milk. These two strains have also demonstrated activity against *Bacillus subtilis*. Two chosen strains (numbered as 4.2 and 5.2) were gram-positive, catalase-negative, homolactic LAB, with rod-shaped cells and well-defined internal granulation. They could grow in skim-milk containing methylene blue. Both strains did not hydrolyze gelatin, did not produce nitrites from nitrates, but deaminated arginine. The patterns of carbohydrates fermentation by two strains were also studied. Both strains were resistant toward kanamycin, ciprofloxacin and doxycycline. Strain 4.2 was also resistant toward ampicillin, and strain 5.2 – toward furazolidone. Finally, using 16S rRNA sequencing 4.2 and 5.2 strains were identified as *Lactobacillus delbrueckii* subsp. *lactis* and *Lactobacillus delbrueckii* subsp. *bulgaricus* respectively.

To conclude, from obtained samples two strains were isolated, which possessed both antibacterial and proteolytic activity and thus had a big practical potential to be used in dairy production.

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