

One Health Meets Food Microbiology



food
micro

19-22 July
2016

Dublin
Ireland

ABSTRACTS BOOK



www.foodmicro2016.com

Poster Abstracts

Food Biotechnology

PO1-FB-077

CONTROLLED AND UNCONTROLLED PH AS A TOOL TO CONTROL THE BIOLOGICAL ACTIVITY OF TWO NEW LACTOBACILLI STRAINS ISOLATED FROM ARMENIAN DAIRY PRODUCT MATSOUNA. Keryan ^{1*}, I. Bazukyan ¹, A. Trchounian ¹¹Department of Microbiology, Plants and Microbes Biotechnology, Faculty of Biology, Yerevan State University, Yerevan, Armenia

Abstract Content: Lactic acid bacteria (LAB) synthesize a broad range of antimicrobial substances, including bacteriocins. Many LAB are also known to possess proteolytic activity. pH is an important factor that can affect both these activities. The aim of this work was to investigate the influence of pH on growth, antimicrobial and proteolytic activities of *Lactobacillus delbrueckii* subsp. *lactis* INRA-2010-4.2 and *Lactobacillus delbrueckii* subsp. *bulgaricus* INRA-2010-5.2 strains, originally isolated from Armenian dairy product matsoun.

Antimicrobial activity of lactobacilli was tested by agar well diffusion assay. To investigate the proteolytic activity sodium dodecyl sulfate polyacrylamide gel electrophoresis was used.

Both strains were able to hydrolyze β -casein in pH range of 5.5 to 8 with maximal activity at pH 5.5. On the other hand, none of the strains was able to hydrolyze whey proteins. Tested strains inhibited the growth of *Micrococcus luteus*, *Bacillus subtilis* and *Salmonella typhimurium*. Both strains showed higher antibacterial activities against Gram-positive test strains, when they were cultivated in MRS medium. On contrary, when cultivated in 10% skim-milk, both strains showed higher activity against Gram-negative *S. typhimurium*. Observed antibacterial activity was stable, when the pH of culture medium was adjusted to pH 6.5. At pH 8 the antibacterial activity of only one strain was stable. Proteinase K inhibited the antibacterial activity of two strains, while catalase had no effect. In a medium with initial, uncontrolled pH 8 the synthesis of antibacterial compounds by two strains started from 6th h of cultivation, while in other tested conditions - only after 9 h. However, the highest antibacterial activity was registered in a medium with initial uncontrolled pH 6.5. Controlled pH condition at value 6.5 was optimal for growth of both strains.

Thus, pH can be used to control the biological activity of investigated strains. Optimal pH for proteolytic activity was 5.5. Controlled pH was more suitable for growth, while non-controlled pH was better for expression of antibacterial activity.

Disclosure of Interest: None Declared

Keywords: antibacterial activity, growth, lactobacilli, pH, proteolytic activity