

# EFFECT OF CA AND MG IONS ON ANTIMICROBIAL ACTIVITY OF LACTIC ACID BACTERIA COMMUNITIES

L. Matevosyan, I. Bazukyan I, A. Trchounian

*Department of Biochemistry, Microbiology and Biotechnology, Faculty of Biology, Yerevan State University, Yerevan, Armenia*

The reduction of pathogens in food production and development of new strategies become more prospective. Lactic acid bacteria (LAB) produce various antimicrobial metabolites. It is important to define the role of metals in the production of such components. The differentiation of metals that are essential for cell and included in the composition of important enzymes is significant to investigate. The aim of this work was the investigation of the effect of ions and their combination on antimicrobial activity (AA) of newly created LAB communities.

The most active strains *L. rhamnosus*, *L. delbrueckii* subsp. *bulgaricus*, *L. delbrueckii* subsp. *lactis*, *L. crispatus*, *S. thermophilus*, *E. durans*, *Lactobacillus* spp. were used for creation of different communities. From 5 to 12 mM were used for  $\text{CaCl}_2$  and  $\text{MgCl}_2$ . The AA of LAB communities was carried out in MRS-broth by 2 ways of cultivation (simultaneous and separated cultivation at 37°C). The best concentrations of  $\text{Ca}^{2+}$  for AA of communities were around 10 mM and for  $\text{Mg}^{2+}$  11 mM. Most LAB mixes showed significant AA against *M. luteus*, *S. typhimurium* and *E. coli* at presence of  $\text{Ca}^{2+}$ , and some of them inhibited the growth of pathogenic *P. aeruginosa*, *S. aureus* in case of separated cultivation. The presence of Mg ions in medium significantly decreased the AA of communities against pathogenic test-organisms, vice-versa the combination of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  essentially increased the inhibitory effect at the same cultivation conditions. The AA of many mixes was significantly increased against all test-organisms at different  $\text{Mg}^{2+}$  concentrations but the addition of combination of ions to MRS didn't cause essential changes of AA of communities in case of simultaneous cultivation. So, the results of these studies allow us to conclude that Ca and Mg ions had inducible effect on antimicrobial activity in case of simultaneous cultivation. This probably can be prospective for creation of new antimicrobial preparations and their possible application in future.