

VIABILITY OF PROBIOTIC lactic acid BACTERIA IN VARIOUS PROTECTIVE MEDIA DURING LYOPHILIZATION AND STORAGE

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Summary. During the process of lyophilization and after it in order to soften the negative effects of various factors (chilling, dehydration, rehydration, long-term preservation) on microorganisms and to maintain their activity and viability protective media of different composition are used.

The strains of probiotic lactic acid bacteria *L. fermentum* and *L. plantarum* were isolated from the organism of cattle and the effect of five protective media during different stages of lyophilization and long-term preservation was studied. MRS selective broth was used for the accumulation of biomass (Liofilchem, Italy) with 2% of bacterial culture. The biomass of microorganisms concentrated during the stationary stage of growth was suspended 1:3 with protective media of certain composition (Nr 1; 2; 3; 4; 5), containing skimmed milk, various carbohydrates and other ingredients. The lyophilizer GT-2 (Leybold-Heraeus, Vokietija) was used. After the lyophilization tightly closed products were kept 12 months at the temperature of +4°C. The number of viable lactobacillus was studied by the plate method on rigid nutritive media – MRS agar (Liofilchem, Italy): under the protective media; after freezing; after lyophilization and after 12 month storage at the temperature of +4°C. The changes of lactobacillus viability were evaluated in each protective media at the different stages of lyophilization and the results were compared to other protective media studied. It was defined that the strain *L. fermentum* No.4 underwent all stages of lyophilization rather satisfactory. The percent of viability survival in the medium No.4 was 81.3% comparing to the initial amount after freezing; 72% - after lyophilization; 66.5% - after 12 month storage; respectively in the medium No.5 – 82.8%; 74.8%; 69.7%. The ingredients of these protective media demonstrated positive effect on the viability of microorganisms in unfavorable environmental conditions. The best survival was found for *L.plantarum* in the medium No.5 – respectively 87.6%; 76.5%; 75.3%.

Keywords: lactobacillus, probiotics, lyophilization, freezing, viability, protective media.