

# Development of the composition of the polystrain probiotic on basis of the bacteria of genus *Lactobacillus*

S. Starovoitova, L. Oryabynskaya

Department of Biotechnology and Biotechnique of National Technical University of Ukraine “Kyiv Polytechnic Institute”, Building 4, 37, Peremohy avenue, Kyiv 03056, Ukraine  
prombt@fbt.ntu-kpi.kiev.ua

The aim of this work is to create a new polystrain probiotic on basis of the lactic acid bacteria of the genus *Lactobacillus* with high therapeutic properties.

The screening work for choosing bacteria of the genus *Lactobacillus* by them basic probiotic properties was carried out. During the screening work five strains with high probiotic indexes that didn't antagonist each other: *L. delbrueckii subsp. bulgaricus* LB86 BKIIM-B-5788, *L. delbrueckii subsp. delbrueckii* DSM20074, *L. rhamnosus* LB3 IMB B-7038, *L. rhamnosus* V<sup>®</sup>, *L. acidophilus* (C) were chosen. The ratio of chosen strains in composition was worked off. The high antagonistic, adhesion, immunomodulation and antiviral properties of developed composition of the bacteria were shown.

The developed composition had high sorption ability in relation to the ions of heavy metals ( $\text{Cd}^{2+}$ ,  $\text{Cu}^{2+}$ ,  $\text{Pb}^{2+}$ ), that can cause of possibility probiotics based on lactic acid bacteria to exterminate heavy metal ions from human organism.

Method of taking of spectral-dynamic characteristics of biological objects for realization method of spectral-dynamic analyzes for pharmaceutical development of probiotics for express assessment their main properties was developed. Potential biotherapeutic effects of the lactic acid bacteria and developed composition of them on different organs and systems of human organism by spectral-dynamic analysis were studied. This study gave a possibility to find out perspective fields of using developed composition of probiotic. Possibility of regulation (stimulation/suppression) of growth of the lactic acid bacteria by physical methods *in vitro* was shown.

The developed composition of lactic acid bacteria has higher stability for influence of aggressive condition of gastrointestinal tract, adhesion, antimutagenic activity than Lactobacterin, and also unlike it shows a capacity for sorption of ions of heavy metals. After conducting of row of preclinical and clinical researches the developed composition of lactic acid bacteria can be recommended for the use as medication for the prevention and therapy the population of different countries.