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Biological properties of probiotic microorganisms after immobilization on carbon-containing sorbents and low temperature storage

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The question on expedient use of the probiotics in a combined treatment of a number of diseases accompanied by quantitative and qualitative changes in the intestinal microbiota, has still remained debatable. However, the positive effect of probiotics was confirmed by the reports and recommendations of FAO, WHO, WGO (2002, 2008, 2011, 2012, 2014). In this regard, the researches are performed to design the new probiotic drugs, in particular those, immobilized in the gel carriers or on the surface of the sorbents.

We obtained the experimental drugs, containing *Saccharomyces boulardii*, *Bifidobacterium bifidum* LVA-3, *Lactobacillus delbrueckii* subsp. *bulgaricus* 1Z 03501, immobilized on the carbon-enterosorbents. We investigated the safety of the “carrier - cells” systems after storage for one year at various temperatures. There were studied biological properties and therapeutic efficiency of probiotics, immobilized on enterosorbents, after low temperature storage.

It has been found that during low-temperature storage the safety of “carrier -cells” system is affected by cooling rate, composition of preserving medium, species cryoresistance of microorganisms, the sorbent structure.

The maximum safety of the drugs was provided by the temperature regimens from -80 to -196°C. The manipulations, associated with immobilization on enterosorbents and low-temperature storage did not change in probiotics the spectrum of antagonistic activity and sensitivity to antibiotics, the enzymatic properties and the resistance rate to gastric juices and bile.

Introduction of immobilized probiotics to laboratory mice and rats with experimental chemotherapy dysbiosis contributed to a more rapid recovery of intestinal microbiota and eradication of internal organs on translocated microflora.

Biography

Vysekantsev I. is PhD (Med), he is qualified as a highest category doctor. Thirty nine years' experience of working at the Institute for Problems of Cryobiology & Cryomedicine of the National Academy of Sciences of Ukraine. During 20 years being the lecturer of the medical microbiology training course at Medical Faculty of V.N. Karazin Kharkiv National University. He currently heads the Department for Long-term storage of biological objects at low temperatures and Cryomicrobiology. Engaged in studying the mechanisms of anabiotic state of microorganisms and development of techniques of long-term storage of microorganisms for biotechnology and medical industry.

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