

## PROBIOTIC MICROORGANISMS AS BASIS OF IMMUNOBIOTICS AND THEIR THERAPEUTIC EFFECTS

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**Relevance.** Considering the negative impact of external and internal factors on the human immune system bacteriatherapeutic drugs based on the microflora with immunomodulation properties - immunobiotics is relevant area of the modern pharmaceutical industry.

**Purpose and tasks.** Recent studies of composition and functions of human intestinal microflora caused interest in the target application and development of probiotics for the prevention and treatment of somatic illness. Disturbance of the microbiota are associated with inflammatory diseases, namely with the disorder of communication between cells of the immune system and the microbiota. The basis of this kind of disorder is inflammation of communication between immune system cells and microorganisms caused by a change in their composition. Balanced immunoregulation and inhibition of the inflammatory response of the immune system facilitates restoration of disturbed microbiota composition. Effective factor restoring disturbed microbiota is probiotics based on probiotic microorganisms, their metabolites and/or structural components (probiotics paraprobiotics, synbiotics etc.).

**Results and discussions.** There are many reasons a disturbance of intestinal microflora, diet high in polyunsaturated fats, antibiotics, stress, local and systemic inflammatory diseases and others. In many cases, several factors acting simultaneously. The consequences of intestinal microflora disturbance are complex and can cause both local (bowel disease) and systemic (metabolic disease) pathological conditions (Crohn's disease, diabetes, obesity, atopic dermatitis, allergies, etc.). Biological effects of probiotic microorganisms are strain specific. Depending on the type, species, strain probiotic bacteria can have immunostimulatory, immunodeviatory (bipolar) and immunoregulatory / suppressive effect. *Lactobacillus rhamnosus* is typical probiotic component. It is shown that this type of bacteria characterized as inflammatory, immunomodulatory and anti-inflammatory action. Anti-inflammatory immunomodulatory properties inherent to *L. rhamnosus* GG. The use of probiotic microorganism alone and in combination with other can have different effects on immune responsiveness. Thus, *L. casei* Shirota refer to multifunctional immunobiotics with a wide range of diverse immunomodulatory action. Immunomodulatory effects of probiotic bacteria realized through cell-association mechanisms and production of biologically active substances with immunoregulatory properties. Strategy of effective use of probiotics immunomodulatory action including: knowledge of microbiota composition and functions with considering age and individual characteristics; assessment of systemic and local immune reactivity; analysis of the mechanisms of action of probiotic microorganism.

**Conclusions.** Modulation of the immunological reactivity - one of the important mechanisms of action of probiotic microorganisms, can be the basis for the differentiated application of probiotic for prevention and treatment of human diseases. Strategy for effective application of immunomodulatory activity of probiotics contains three components. The first - knowledge of composition and functions of various microflora compartments in view enterotype, age and individual characteristics of microbiota metabolome, causes and nature of dysbiosis. The second - assessment of systemic and local immune reactivity, immunopathogenetic of pathological process, circadian dynamics. The third - analysis and consideration of all properties and mechanisms of probiotic microorganism action, in particular nature and direction of immunomodulatory effects. Comprehensive assessment of all components necessary to determine the nature of immunomodulation, composition of probiotic, dosage and mode of application, as well as realize the potential of probiotics specifically reaching maximum effectiveness.