

## New aspects of using probiotics

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**Introduction.** There is a functional connection between the gastrointestinal tract (GIT) and the central nervous system (CNS) of the host's organism. Recently, more and more experimental evidence has emerged that the other key player in this interaction is the intestinal microbiote [1].

**Results and discussion.** Physical and psychological stress affects not only the immune system, but also hormonal and digestive homeostasis. Immune and neuroendocrine systems provide integrated responses to environmental signals, and the relationship between stress and immune function in many contexts, including a proliferative response to mitogens and cellular activity, has been demonstrated. Stress can lead to an imbalance between pro- and anti-inflammatory cytokines or uncontrolled production of cytokines. Dysregulation of congenital and adaptive intestinal immune responses directed against bacterial flora, including the destruction of oral tolerance to environmental antigens and commensals, are involved in several pathogenetic mechanisms. The integrity of intestinal microbiota can be influenced by some external factors, including the use of antibiotics, radiation, changes in the GIT, changes in the diet, psychological and physical stress. Psychological stress can directly affect the composition of the microflora, in particular with a noticeable decrease in lactic acid bacteria. GIT changes caused by stress factors make the conditions of the intestinal medium less favorable for survival, adhesion and replication of lactobacilli [2].

Long psychological stress also leads to a significant reduction in the production of mucin and the reduction of the presence of acid mucopolysaccharides on the surface of the gut mucosa, which facilitates the colonization of the intestine by pathogenic microorganisms. The balanced intestinal microflora is important not only for the maintenance of intestinal homeostasis, but also for regulating the functionality of the immune system with a direct effect on the intestinal system - the brain.

Due to the interaction between the CNS and the intestine, the use of probiotics can be useful for improving bowel homeostasis and preventing the development of dysbiosis associated with physical and psychological stress states.

**Conclusions** Probiotics and functional foods can affect the action of the intestinal microbe on the central nervous system and the brain function. Along with the diet, they can restore intestinal homeostasis to improve cognitive or emotional function, and can be used to prevent, treat neurological disorders and to maintain the function of the immune system in stressful subjects.

### Literature

1. Старовойтова С.А. (2017), Пробиотики и стресс, Материалы V Межд. науч. конф. мол. ученых и студентов «Перспективы развития биологии, медицины и фармации», Вестник ЮКГФА, 3 (4), с. 6-7.

2. Старовойтова С.А., Карпов А.В. (2015), Иммунобиотики и их влияние на иммунную систему человека в норме и при патологии, *Biotechnology. Theory and Practice*, 4, с. 10 - 20.