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Research Article

# THE IMPORTANCE OF PROBIOTICS IN CHILDREN'S IMMUNITY

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## ABSTRACT

About the multifaceted effect of probiotic strains on the resistance of the human body to various pathogens and the formation of the immune response basic information, the data of studies confirming the effect of lacto- and bifidobacta are presented.

## KEYWORDS

Bifidobacteria, Immunity, Lactobacteria, Probiotics.

## INTRODUCTION

The problem of children's immunity is one of the first health problems. Possibilities of active influence on immunity did not allow to reduce the spread of acute infectious pathology among the children's population. Pediatricians note a high incidence of respiratory and intestinal infections in many children of various ages, reaching 8 or more episodes per year [1, 2]. Self-treatment is often recorded among high school students, students and adults, which significantly reduces official statistics. Mild and moderately severe forms of the disease are reported in children, but severe cases, including fatal cases, occur with influenza, especially in immunocompromised patients [3, 4]. At the same time, there is an increase in the number of autoimmune pathology cases, which are often directly related to past or persistent infection [5, 6]. Inadequate response of the immune system causes the onset and development of the disease. Allergic reactions, which are often noted among people of different ages today, can be considered a variant of an

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unwanted immune reaction. One of the important reasons for changing the spectrum and activity of pathology should be considered the change in living conditions of modern man: increase in the level of air pollution, the possibility of sudden changes in climatic conditions, stress; the use of a large amount of preservatives, antiseptics and antibiotics with food, the lack of vitamins and probiotics in it. For hundreds of years, humanity has been actively using fermented milk products: yogurt, buttermilk, kumis, sauerkraut, pickled apples, and others, depending on national preferences and climatic conditions. These components have formed the microflora and metabolism of the human body for a long time and are involved in the functioning of various organs and systems, primarily the digestive and immune systems. However, nowadays such food has become unaffordable for most of the city dwellers. To date, the role of microflora for the human body is generally recognized. In the course of research and clinical observations, it has been shown that microflora should be considered as a separate system that determines the vital processes of the body and modulates the functional state of other organs and tissues. Studying the characteristics of bacteria present in the mucous membranes of a healthy person has shown their direct influence on the formation of the immune response [8]. Studies have shown that probiotic strains exert resistance to infection in the human body through interrelated mechanisms. The first line can be considered the main metabolic products of lacto- and bifidobacteria: acetic and lactic acids. They regulate the water-salt and acid-alkaline balance, prevent the adhesion of pathogenic and opportunistic bacteria, create optimal conditions for population growth and the activity of normal flora [10, 11]. In addition, probiotics produce bacteriocins, protein substances that directly inhibit the growth of other microorganisms [12]. Their effect is due to degradation of cell wall peptidoglycan, suppression of protein, DNA or RNA synthesis, induction of autolysis of pathogenic or opportunistic bacteria and fungi. Another active product of the normal human microflora is polysaccharides (exopolysaccharides), which prevent the development of opportunistic and pathogenic microorganisms, thereby ensuring resistance to colonization, regulate the phagocytic activity of macrophages and the production of anti-inflammatory cytokines, and bifidus and promotes the growth of lactobacilli [13-16]. Today, it is known that probiotics actively participate in the breakdown of proteins, fats, carbohydrates, absorption and synthesis of vitamins, assimilation of macro and microelements necessary for the normal functioning of the immune system. Therefore, it is clear that the lack of the main components of the normoflora is naturally accompanied by a decrease in the activity of the immune response. Probiotic strains can exert activating and modulatory effects on immunocompetent cells, which protect against both

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acute intestinal infections and respiratory tract infections [17]. D. Paineau and others. In healthy volunteers, consumption of probiotics at the rate of 2 × 1010 CFU per day has been confirmed to accelerate IgG immunoglobulin production and increase its concentration in response to oral cholera vaccine administration compared to the placebo group [18]. According to the treatment data, among preschool children (2-5 years) who received Lactobacillus paracasei LPC-37 or Bifidobacterium lactis HN019 for 9 months, the incidence of diarrhea was significantly lower: 11.7, respectively % and 8.4%. with 16.9% for placebo. Lactobacilli - 7% and bifidobacteria - 7.3%, and febrile episodes were less common in patients not taking probiotics - 11.5% [19]. On laboratory tests, fecal IgA and serum IL-8 levels were significantly lower among participants who received Bifidobacterium lactis compared to children who received placebo. Studies by G. Leyer et al. Children who received Lactobacillus acidophilus NCFM or Lactobacillus acidophilus NCFM with Bifidobacterium lactis Bi-07 twice daily for 6 months saw a 53.0% and 72.7% reduction in fever and a 41.4% and 62.1% reduction in cough, respectively. showed. Tumovni - 28.2% and 58.8%. Probiotic use for 6 months resulted in a 68.4% reduction in acute respiratory illness for one strain and 84.2% for two [20]. A large number of studies have been devoted to studying the effect of Lactobacillus reuteri on the frequency of acute respiratory and intestinal infections. Taking this type of beneficial bacteria was shown to reduce disease in 10.6% of those taking a placebo, compared to 26.4%. At the same time, the number of days of incapacity for work was reduced to 0.4% on the background of probiotic intake, while in the comparison group this indicator was 0.9% [27]. A detailed study of the characteristics of Lactobacillus reuteri allowed us to conclude that this bacterium produces a special antimicrobial substance - reuterin, which causes oxidative stress - an imbalance between the production of active oxygen and the ability of the microorganism to bind intermediate toxic molecules , which leads to pathogen inhibition and subsequent death [28]. Thus, today there is no doubt about the multi-component positive effect of lacto- and bifidobacteria on the functioning of the immune system. It can be seen that the human body's need for probiotic strains, which have been formed over many years, significantly exceeds the food intake, which causes a high susceptibility of most of the population to infectious diseases. The high frequency of episodes of acute respiratory and intestinal infections should be considered as an indication for prescribing probiotics. Preference should be given to well-known and studied strains. Among the many different probiotic formulas, the safest and most studied are: synbiotic - probiotic and prebiotic Linex for children from birth (in a sachet) and Linex forte for children over 3 years of age (Bifidobacterium animals. Subsp. lactis 1 billion Lactobacillus acidophilus Beneo synerdji1 , containing 90-94% inulin and 6-10% oligofructose) In most cases,

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one dose is enough to prevent repeated episodes of acute infectious diseases: 1 sachet or 1 1 capsule containing a billion live microorganisms. If there are signs of serious dysbiotic diseases, it may be necessary to increase the daily dose: for example, antibiotic-related diarrhea, candidiasis. Often sick children and adults with clear symptoms of lacto- and bifidobacteria deficiency, usually accompanied by digestive disorders, the first choice will be complex formulas with an abundance of live bacteria. Among them, we can recommend a food supplement containing Lactobacillus plantarum LP01, Lactobacillus plantarum LP02, Lactobacillus rhamnosus LP04, Lactobacillus rhamnosus LP05, Bifidobacterium rhamnosus LP05, BS1 lactobacillus class a. The prebiotic component in this composition contains a molecule consisting of glucose and 2-4 fructose monomers, which promotes the development of normal flora, but at the same time prevents the growth of pathogenic microorganisms. The composition is approved for use from the first month of life. 1 dose (1 package) contains 15 billion probiotic bacteria.

## CONCLUSIONS

Probiotic strains participate in the formation of immunity and resistance of the human body against common acute respiratory and intestinal infections. The lack of lacto- and bifidobacteria in the population contributes to the increase in the number of episodes of infectious diseases. Prophylactic use of formulas containing studied probiotics or, if necessary, multi-component synbiotic complexes helps the immune system to function adequately, reduces seasonal diseases in children and adults.

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