

ROLE OF BIOLOGICALLY ACTIVE POLYSACCHARIDES IN THE TREATMENT OF ACUTE AND RECURRENT RESPIRATORY TRACT INFECTIONS AMONG SPORTS PEOPLE

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Annotation. The article presents the results of an analysis of the use of biologically active polysaccharides in childhood athletes with acute and recurrent respiratory tract infections. The study involved child athletes aged 7-11 years of various sports who had a history of acute respiratory tract infections. The division of study groups was carried out on the basis of therapeutic treatment regimens (main group - standard treatment with the addition of β - glucan , comparison group - standard treatment). Based on the results of the analysis of therapeutic measures over a period of three weeks, a positive dynamics of therapy was established while taking biologically active polysaccharides (β - glucan).

Keywords. β - glucans , biologically active polysaccharides, immunomodulation, recurrent respiratory tract infections, treatment, prevention, athletes.

Introduction. Respiratory tract infections are the most common form of infection in any age category. For example, during periods of overwork and stress, chronic inflammatory diseases and secondary immunodeficiency states in athletes require especially close attention. Biologically active polysaccharides are among the most studied natural immunomodulators with a pluripotent mechanism of

action and high biological activity [1]. According to many studies, biologically active polysaccharides have immunomodulatory, anti-inflammatory and anti-infectious activity, as a result of which they can be used as a treatment and prevention of acute respiratory viral infections [4]. Based on numerous studies, it has been proven that the use of β - glucans is a possible therapeutic and prophylactic method for the treatment of recurrent respiratory tract infections in children [3].

Application of biologically active polysaccharides in sports practice

They are also characterized by numerous positive effects both on the health side and on the level of the athlete's physical and mental qualities. As is known, short-term physical activity has an immune -activating effect on the athlete's body. However, with prolonged and exhausting physical activity, the immune system is disrupted. Such changes are temporary, but in the absence of time for recovery, immunosuppression becomes deeper, which leads to the development of secondary immunodeficiency [2], which means an increased risk of developing acute respiratory diseases that negatively affect the athlete's athletic performance. Several studies have described clinical studies confirming the beneficial effects of β - glucan on acute and chronic respiratory diseases in children and adolescents (Pediatrics journal International). Studies have shown that children receiving β -glucan experienced a significant reduction in the incidence of acute respiratory infections. Another study published in the Journal of Nutrition " showed that β -glucan reduces inflammation and improves immune response in children with respiratory diseases.

As practice shows, β - glucan is taken in the form of food supplements, which is convenient when prescribed to children and adolescents, as well as sports people.

Target. To evaluate the use of biologically active polysaccharides in pediatric athletes with acute and recurrent respiratory tract infections.

Materials and methods. The work was carried out on the basis of the children's and youth sports school No. 2 of the city of Tashkent and the laboratory of vaccines, serum preparations and microbiological studies of the Center for the Safety of Pharmaceutical Products under the Ministry of Health of the Republic of Uzbekistan. The study population consisted of child athletes of various sports who had a history of acute respiratory tract infections. All patients were divided into two study groups (main and comparison). Thus, the main group included 38 athletes aged 7 to 11 years, which was divided into two subgroups (1st - 22 children with an acute course and 2nd - 16 children with a recurrent course). The comparison group consisted of 32 athletes of a similar age who received a generally accepted therapeutic treatment regimen (of which 17 with acute respiratory infection (first subgroup) and 15 with recurrent (second subgroup). Patients of the main group were treated with biologically active polysaccharides (insoluble yeast β -glucan (75 mg/day) according to the following regimen: for 20 days, a single dose of β -glucan a during dinner.

Throughout the study, general clinical methods were used: collection and assessment of anamnesis, determination of somatic status, standard instrumental studies (CBC, microbiological examination of inducible sputum).

Statistical analysis was carried out using the Statistica 10.0 package: calculation of the arithmetic mean (M), average error of a given value (m), significance of differences $p < 0.05$.

Results. In a study using β -glucan in complex therapy, positive dynamics of symptomatic indicators were established in comparison with standard treatment. Thus, the clinical effect of using β -gluconate was reflected in a decrease relapses

by 1.6 times, and the duration of episodes of acute respiratory infections by 1.2 times (Fig. 1).

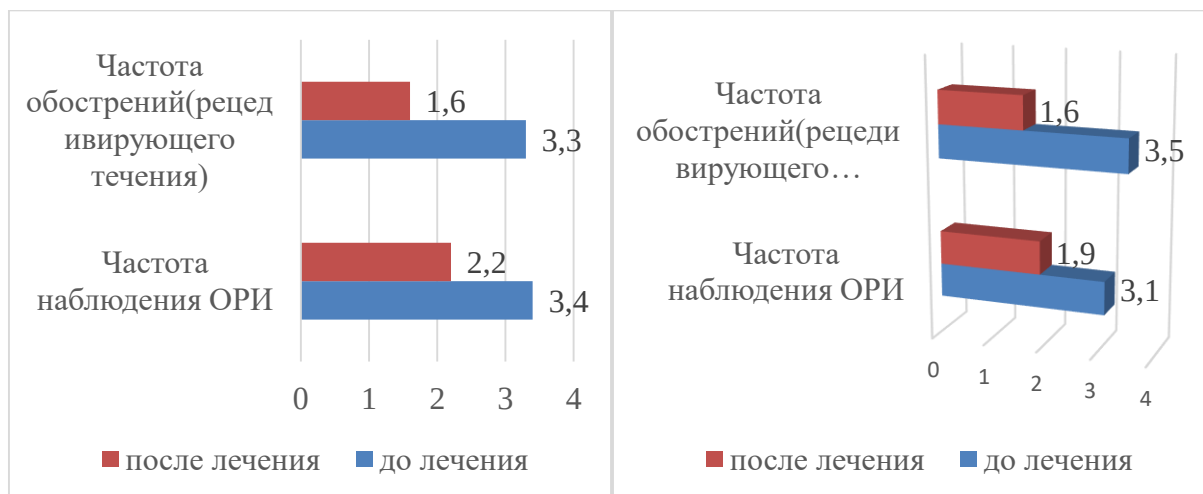


Figure 1. Analysis of the frequency of observation of acute respiratory diseases and exacerbations of recurrent bronchitis in two study groups before and after treatment during the year

As the results of the study showed over time, during clinical recovery, not all patients experienced a complete restoration of the reserve indicators of local immunity of the respiratory tract. Thus, at the end of standard treatment, the indicators of the quantitative composition of epithelial cells and neutrophils in nasal secretions remained not significantly changed and, as a result, this circumstance does not reduce the risk of recurrent respiratory diseases. Tables 1 and 2 show the results of the analysis of indicators of the cellular composition of nasal secretions in the dynamics of the main group and the comparison group (various therapeutic treatment regimens for the sports contingent).

Table 1

Indicators of the cellular composition of nasal secretions in athletes of the main group in dynamics

Indicators	Before treatment		After treatment	
	I subgroup (n=22)	II subgroup (n=16)	I subgroup (n=22)	II subgroup (n=16)

Neutrophils	51.6±2.7	55.2±2.1	37.6±1.5*	39.6±1.2**
Epithelial cells	53.8±2.4	56.3±2.3	42.3±2.4*	44.9±1.7*
Lymphocytes	1.5±0.07	1.2±0.01*	1.2±0.07	1.0±0.02*
Eosinophils	2.1±0.04	2.3±0.03	1.1±0.11*	1.4±0.08*

Note: * $p < 0.05$ before and after treatment

Analysis of the cellular composition of the nasal secretions of the examined athletes revealed a high quantitative content of neutrophils. Repeated analysis of the secretion (after 14 days) showed a decrease in its average value in both groups. However, it was found that against the background of standard treatment, the number of neutrophils practically did not differ from the initial values, while in the group of patients taking β - glucan , there was a significant decrease (83%) in the level of neutrophil granulocytes and epithelial cells.

table 2

Indicators of the cellular composition of nasal secretions in athletes from the comparison group over time

Indicators	Before treatment		After treatment	
	I subgroup (n=17)	II subgroup (n=15)	I subgroup (n=17)	II subgroup (n=15)
Neutrophils	52.8±1.9	54.2±2.2	47.7±1.1	50.2±1.3
Epithelial cells	54.6±2.2	56.2±2.4	52.3±2.5	55.4±2.1
Lymphocytes	1.3±0.1	1.2±0.05	1.2±0.5	1.1±0.01
Eosinophils	2.1±0.1	2.3±0.4	2.0±0.07	2.3±0.2

Note: * $p < 0.05$ before and after treatment

Thus, the results of the positive dynamics of the use of biologically active polysaccharides in the complex treatment of children with acute and chronic respiratory tract infections based on clinical and laboratory indicators are the basis for strengthening the immune system, which is especially important for athletes. Research shows that β - glucan stimulates the activity of macrophages, neutrophils and other cells of the immune system.

Conclusion. The study showed that when biologically active polysaccharides are used in complex therapy of acute bronchitis in children, positive dynamics are observed. It is noted that β -glucan stimulates the activity of macrophages, neutrophils and natural killer cells, enhances the immune response against viruses and bacteria that cause bronchitis; reduces oxidative stress, reducing inflammation in the airways. In athletes with a history of chronic bronchitis, use of β -glucan increases general immunity and reduces the frequency of exacerbations, promotes the growth of beneficial microflora, reduces the risk of complications caused by bacterial and viral infections.

Literature.

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