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NEW STRATEGIES IN CONTROLLING CHRONIC ATOPIC DERMATITIS AND EVALUATING THE ROLE OF MAXITOPIC POSTBIOTICS IN THE TREATMENT

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One of the promising perspectives in this field is the modulation of the gut microbiota using postbiotics, as dysbiosis has been linked to the development of atopic dermatitis. This article is dedicated to studying the effectiveness of a comprehensive approach that includes postbiotics in the treatment of atopic dermatitis in children.

Keywords
Atopic dermatitis, postbiotics, children, SCORAD.

Atopic dermatitis (AD) is the most common chronic, relapsing inflammatory skin disease, characterized by a variety of clinical manifestations. It is often associated with other allergic conditions such as food allergies, asthma, and allergic rhinitis. The pathogenesis of this disease involves alterations in the microbial flora, defects in the epithelial barrier, and dysregulation of the immune response.

According to available data, AD arises due to a T-cell imbalance, in which not only is there an increased differentiation of CD4+ naïve T cells into Th2-type helper T cells, but also elevated production of interleukins IL-4, IL-5, and IL-13. This immune response may lead to local activation of IgE and eosinophils [1].

Atopic dermatitis causes chronic itching and scratching, which can negatively impact the patient's psychosocial well-being and overall quality of life (QoL). A decrease in quality of life is often associated with sleep disturbances and symptoms of depression, which may, in turn, affect the course and management of atopic dermatitis.

In recent years, emerging evidence has shown that dysbiosis is linked not only to gastrointestinal diseases but also to the development of allergic and immunopathological conditions, particularly atopic dermatitis [2].

Intestinal dysbiosis has a detrimental effect on skin function. Microbial metabolites—such as aromatic amino acids, free phenol, and p-cresol—enter the bloodstream, reach the skin, and disrupt the differentiation of epidermal cells. This

results in reduced skin hydration and impaired integrity of the skin barrier layer [3].

In addition, intestinal dysbiosis increases the permeability of the epithelial layer, which leads to the activation of effector T cells and the release of pro-inflammatory cytokines. These cytokines contribute to the development of inflammatory skin diseases through both immune and non-immune signaling pathways [4].

Gut microbial communities play a crucial role in the development of the host immune system, and dysbiosis within the gut microbiota is closely associated with immune dysfunction [5,6].

Postbiotics are non-viable microbial cells or their components that exert beneficial effects on the host, often through immunomodulatory properties. They positively influence host health by modulating immune responses, competing with harmful gut flora, toxins, and host-derived substances, and improving intestinal barrier function.

The most commonly used organisms include *Lactobacillus*, *Bifidobacterium*, and *Enterococcus* species, each strain exhibiting unique immunomodulatory functions by producing pro- and anti-inflammatory cytokines [7]. Moreover, some strains have demonstrated the ability to accelerate the restoration of skin barrier function [8].

Postbiotics also have the ability to enhance IgA production in the host's gastrointestinal tract (GIT). Secretory IgA protects the intestinal epithelium from colonization and/or invasion by pathogens or commensal microorganisms. It suppresses pro-inflammatory responses by facilitating the transport of antigens to dendritic cells through binding with antigens, pathogens, or commensals [9].

Given the clear pathogenic link between disturbances in gut microecology and the development of atopic dermatitis (AD), normalization of the gut microbiota should be considered a potential therapeutic strategy.

To evaluate the effectiveness of a comprehensive treatment approach that includes postbiotics in addition to standard therapy in children diagnosed with atopic dermatitis (AD).

We examined 30 children with atopic dermatitis, aged 3 to 17 years (18 girls and 12 boys). The following parameters were assessed: total IgE levels, complete blood count (CBC), and the severity of the condition using the SCORAD index.

In nearly all children (over 75%), additional gastrointestinal pathologies were identified.

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Inclusion Criteria:
Children aged 3 to 17 years diagnosed with atopic dermatitis (AD) with a SCORAD score of ≥ 25.

Exclusion Criteria:
Children who had received antibiotics or postbiotics within 4 weeks prior to the study, and those with severe comorbid conditions.

Based on the treatment administered during the study, patients were divided into two balanced groups:

• The first group — the main group (n = 15) received comprehensive treatment, which included antihistamines, desensitization agents, topical glucocorticosteroids, and the postbiotic Maxitopic to correct microbiocenosis. The active components of Maxitopic are live bacteria *Lactobacillus paracasei* and *Lactobacillus fermentum*. The postbiotic was administered once daily for a duration of 3 months.

• The second group — the control group (n = 15) received only standard therapy.

The effectiveness of the comprehensive treatment was evaluated using the SCORAD scale at 4, 12, and 16 weeks (Table 1).

Thus, in the control group receiving only conventional therapy, the average duration for the resolution of erythema was 4.7 ± 1.5 days, skin itching lasted 6.8 ± 1.2 days, and skin dryness persisted for 1,2.3 days.

In the second (main) group, patients treated with Maxitopic experienced earlier remission of the disease and resolution of skin symptoms (erythema — 3.4 ± 1.2 days; itching — 4.3 ± 1 day; skin dryness — 9.8 ± 1.2 days).

Table 1.

Dynamics of the SCORAD Scale

	Main Group	**Control Group**
SCORAD before treatment	48,2 ± 6,1	47,8 ± 5,9
SCORAD after 4 weeks of treatment	18,4 ± 4,3*	29,6 ± 5,7

** Statistically significant differences (p < 0,05)*

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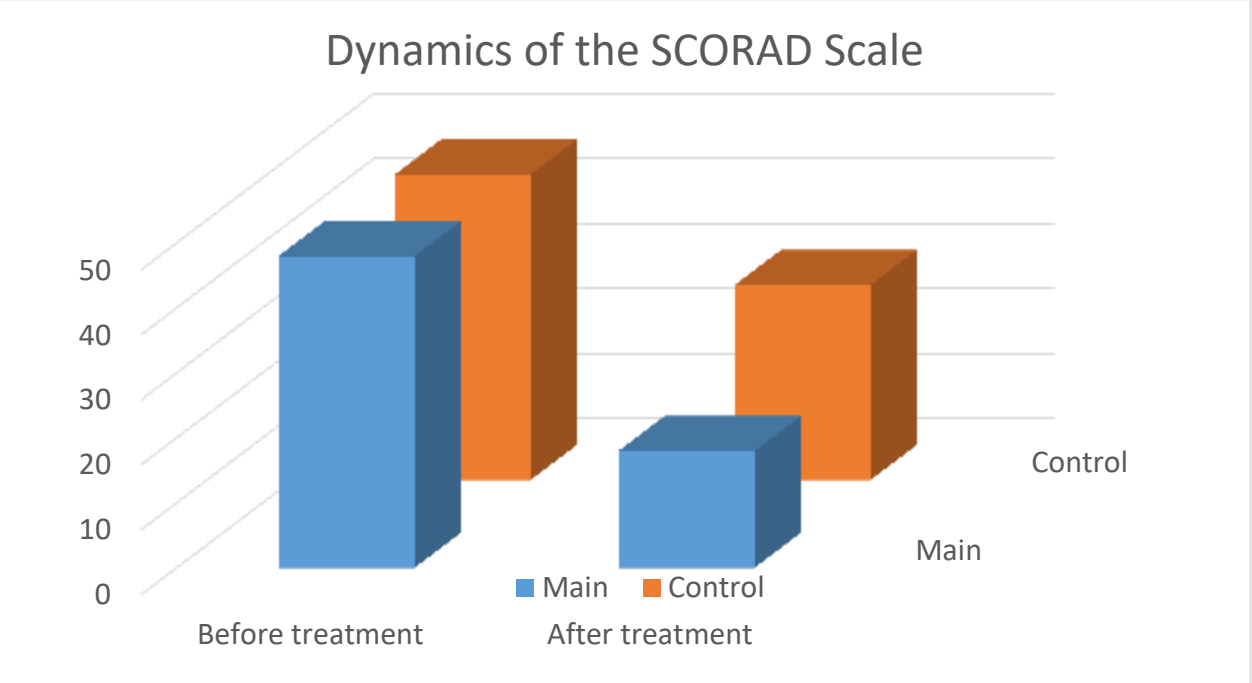

The average IgE level before treatment was 167.4 IU/mL in the main group and 156.8 IU/mL in the control group. After 4 months of treatment, IgE levels decreased to 47.8 IU/mL in the main group and 100.1 IU/mL in the control group.

These results indicate that the addition of Maxitopic (whose active components are live bacteria *Lactobacillus paracasei* and *Lactobacillus fermentum*) to standard therapy leads to a significant reduction in SCORAD scores compared to the control group.

During the treatment, normalization of gastrointestinal function was observed in patients. Among children suffering from functional constipation, 78.6% in the group receiving Maxitopic postbiotic experienced normalized bowel movements, whereas only 36.4% of children in the control group showed improvement in bowel function.

Among children suffering from liquid stool, 90% showed improvement within 1–2 days after being prescribed Maxitopic, while in the group receiving conventional therapy, improvement was observed in only 26% of cases.

In children with atopic dermatitis who experience functional constipation, flatulence, or liquid stool, it is more appropriate to prescribe Maxitopic postbiotic as part of a comprehensive treatment alongside conventional therapy, following the regimen described above.

Conclusion:

The addition of postbiotics to standard therapy for atopic dermatitis (AD) significantly enhances clinical improvement in children and can be considered a promising approach in treatment.

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