

## THE EFFECTIVENESS OF TREATMENT WITH ORAL PROBIOTICS IN PATIENTS WITH ATOPIC DERMATITIS: A REVIEW OF LITERATURE

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**Abstract:** **INTRODUCTION:** Atopic dermatitis is a chronic inflammatory skin condition that begins in childhood and continues into adulthood. Currently, the treatment recommended by the Dermatology Guidelines corresponds to the use of topical corticosteroids in most cases. However, recent research highlights new therapeutic approaches, including the use of oral probiotics in order to optimize treatment. Although probiotics show potential in modulating the immune system, there are gaps in understanding their mechanisms of action, indicating the need for more research. **GOAL:** To analyze the effectiveness of the use of oral probiotics in the treatment of atopic dermatitis and identify divergences in response to treatment between the adult and pediatric population. **METHODOLOGY:** A literature review was carried out by selecting studies in the MEDLINE-PubMed database (National Library of Medicine, National Institutes of Health) published between the years 2014 and 2024. 57 studies were found, of which 11 were selected by critical analysis. Articles published in English and/or Portuguese that addressed the relationship between oral probiotics and the treatment of atopic dermatitis and available in full were included in this review. The descriptors used were (“atopic dermatitis” OR “eczema”) AND “probiotics”. Through analysis, articles that did not meet the inclusion criteria were excluded, such as animal studies, narrative reviews, treatment with prebiotics and skin probiotics. **RESULTS:** Studies have shown that probiotics demonstrate an immunomodulatory effect and are capable of improving the integrity of the intestinal barrier, which contributes to reducing the inflammatory reaction in AD. Furthermore, these probiotics help regulate the immune system response, specifically the TH1 and TH2 cytokines. Another important finding is the specific combination of microorganisms that

showed better results in AD inflammation. **DISCUSSION:** The interaction between the intestinal and skin microbiota plays a crucial role in atopic dermatitis, influencing the immune response and the integrity of the skin barrier. Probiotic supplementation, especially with a mixture of *Lactobacillus salivarius* and *Bifidobacterium*, resulted in an improvement in the clinical severity and quality of life of patients. However, not all probiotic strains were beneficial, highlighting the need to identify more effective *Lactobacillus* strains. Furthermore, limitations such as lack of precise data on probiotic dosage and composition highlight the importance of further research to better guide the clinical use of probiotics in atopic dermatitis. **CONCLUSION:** Therefore, supplementation with probiotics has been shown to reduce the clinical manifestations of Atopic Dermatitis, evidenced by the decrease in the SCORAD index, which evaluates the intensity of skin lesions. This improvement is attributed to the protective action of probiotics, which control inflammatory reactions, resulting in a reduction in the severity of the disease and a consequent improvement in patients' quality of life. However, despite the observed efficacy, there are still uncertainties regarding the ideal dosage and long-term effects, as well as differences in treatment between children and adults. Given this, the need to invest in more research to optimize the clinical use of probiotics in atopic dermatitis is evident.

**Keywords:** "ATOPIC DERMATITIS", "TREATMENT", "ORAL PROBIOTICS".

## INTRODUCTION

Atopic dermatitis (AD), also known as atopic eczema, is a chronic and inflammatory skin condition in which those affected lose the first protective layer of the skin, therefore becoming more susceptible to infection by bacteria and fungi <sup>1</sup>. Furthermore, AD is often associated with other clinical conditions, such as asthma and allergic rhinitis.

The lesions of this pathology are characterized by itchy rashes, redness and scaling. Although its exact cause is not fully understood, it is known that a combination of genetic, immunological and environmental factors trigger this condition <sup>2</sup>.

From an epidemiological point of view, AD has a global prevalence of 1% to 20%, with the main age group affected being young people, between 15 and 24 years old. However, the onset of the disease appears between three and six months of life, with 60% of patients showing progression in the first year of life and up to 90% at five years of age.

Given the high prevalence of AD in the world and the critical condition of skin lesions, which profoundly affect the quality of life of individuals with this pathology, new discoveries are emerging with the aim of optimizing the treatment of eczema <sup>4</sup>.

Currently, it is recommended to use topical corticosteroids for lesions and intense hydration, especially in the most affected areas (elbow folds, back of the knees and neck). In more severe cases, the use of immunobiologics is recommended dupilumab for patients over 18 years of age. However, recent studies highlight the possibility of using oral probiotics in the treatment and prevention of atopic dermatitis.

Such probiotics correspond to an immunomodulator that acts directly on the immune system, strengthening its defenses and functioning <sup>1</sup>. Despite many benefits associated with the innovative treatment, there

are still significant gaps in understanding the mechanisms underlying the effectiveness of these probiotics in treating atopic dermatitis.

In this sense, it is necessary to carry out a literature review with the aim of synthesizing the most innovative features in the treatment of atopic dermatitis through oral probiotics and highlighting existing gaps in order to guide future research.

## GOAL

To analyze the effectiveness of the use of oral probiotics in the treatment of atopic dermatitis and identify divergences in response to treatment between the adult and pediatric population.

## METHODOLOGY

A literature review was carried out by selecting studies in the MEDLINE-PubMed database (National Library of Medicine, National Institutes of Health) published between the years 2014 and 2024. 57 studies were found, of which 11 were selected by a critical analysis. Articles published in English and/or Portuguese that addressed the relationship between oral probiotics and the treatment of atopic dermatitis and available in full were included in this review. The descriptors used were (“atopic dermatitis” OR “eczema”) AND “probiotics”. Through analysis, articles that did not meet the inclusion criteria were excluded, such as animal studies, narrative reviews, treatment with prebiotics and skin probiotics.

## RESULTS

### TOP OF THE FORM

Studies have shown that probiotics demonstrate an immunomodulatory effect and are capable of improving the integrity of the intestinal barrier, which contributes to reducing the inflammatory reaction in

AD. This happens because they prevent the epithelial and mucosal adhesion of pathogens. Furthermore, probiotics restore the protective function of the intestinal mucosa and help in the degradation of food components, which can trigger allergic reactions, thus reducing the proliferation rate of these pathogens.

In this sense, probiotics, such as *Lactobacillus plantarum*, are commonly used as a complement to treatment, as they play a crucial role in preventing recurrence and controlling the disease. These probiotics help regulate the immune system response, specifically the TH1 and TH2 1 2 cytokines. By suppressing the TH2 immune response, they reduce the clinical symptoms of atopic dermatitis. Furthermore, the administration of probiotics helps to reduce the manifestations of the disease by activating regulatory T cells (Treg) and balancing the TH1-TH2-TH17 2 5 immune response.

Another important finding regarding the type of probiotic was the specific mixture that includes strains LS01 and BR03 <sup>3</sup>. The joint action of these microorganisms has been shown to induce beneficial effects on both clinical and immunological changes in atopic dermatitis (AD) in adults, which suggests its potential as an adjuvant treatment. Probiotics containing *Bifidobacterium lactis* CECT 8145, *B longum* CECT 7347 and *Lactobacillus casei* CECT 9104 showed efficacy in reducing SCORAD values and in the use of topical corticosteroids in patients with moderate AD 2 4.

Despite the benefits demonstrated, some studies have shown that, at 2 years of age, there was no notable difference in the incidence of eczema between babies who received probiotics and those who received placebo 6. However, a significant reduction in sensitization to allergens was observed. food in the group that received probiotics.

## DISCUSSION

From the analysis of the collected data, it is observed that the interaction between the intestinal microbiota and the skin microbiota plays a fundamental role in the pathophysiology of atopic dermatitis. This communication, known as the gut-skin axis, influences the immune and inflammatory response, as well as the integrity of the skin barrier. Therefore, there is a decrease in clinical severity and an improvement in patients' quality of life after probiotic supplementation, especially with the mixture of *L. salivarius* and *Bifidobacterium*<sup>3</sup>.

However, not all strains proved beneficial to patients, due to the nature of the disease and individual variability. Some, in turn, demonstrated worsening of eczema, requiring new experiments to determine the most efficient *Lactobacillus* strains for treating and preventing the disease. Furthermore, other limitations were identified, such as the lack of precise data on probiotic dosage and composition in some studies.

## CONCLUSION

Therefore, from the analysis of the studies, it is concluded that supplementation with probiotics reduces the clinical manifestations of Atopic Dermatitis, by reducing the SCORAD index, which evaluates the intensity of skin lesions and symptoms (erythema, papules, crusts, abrasions, lichenification and dryness).

The improvement in clinical signs can be explained by the protective action of oral probiotics by controlling inflammatory reactions in the body. This way, the new treatment reduces the severity of the disease, which implies an improvement in the quality of life of patients.

Although there is effectiveness in treating Atopic Dermatitis with oral probiotics, the correct dosage and its long-term effect are still unknown. Furthermore, there is not enough evidence about the difference in treatment between children and adults. Therefore, further research on the subject is necessary in order to fill the existing gaps and, thus, optimize its clinical use for the improvement of patients.

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