Dermatological Health, 2025, Volume 3, Issue 1
http://ojs.bbwpublisher.com/index.php/DH
Online ISSN: 2981-8206

Review of New Treatment Methods for Psoriasis and Dermatitis

Shaohua Han, Ting Zhou, Faqing Huang*

Jingzhou First People's Hospital, Jingzhou 434000, Hubei, China

***Corresponding author:** Faqing Huang, 279004568@qq.com

Abstract: Psoriasis and dermatitis are chronic and troubling skin diseases. To face this challenge, a variety of innovative therapeutic methods came into being. It is necessary to review and summarize the research process of these novel drug therapeutic methods. Local researchers have conducted a comprehensive understanding of the research of traditional medicines, and the research progress of novel therapeutic methods such as biologic drugs and small-molecule targeted drugs has been widely reported. A comprehensive comparison of the new treatments helps to reveal the nuances of each treatment and understand the depth and breadth of its therapeutic effects. New therapeutic approaches, such as cell transplantation, biologic drugs, and small-molecule targeted drugs, are more effective in the treatment of psoriasis and dermatitis than traditional approaches, with minimum side effects. The results of new drug research have opened new possibilities for the treatment of psoriasis and dermatitis, guided the path of future scientific research, and significantly improved the quality of life of patients.

Keywords: Psoriasis; Dermatitis; Novel treatment methods; Biologic products; Small-molecule targeted drugs

Online publication: April 2, 2025

1. Introduction

Psoriasis and dermatitis, the most common skin diseases in the world, have been severely affecting patients' daily lives, causing them to suffer physically and greatly reducing their quality of life. In order to change this situation, many researchers have carried out a series of studies and proposed new therapeutic strategies, including biological products, small-molecule targeted drugs, and cell transplantation. These new treatments not only open up new possibilities for improving patients' quality of life but also point the way for future dermatological treatment. Systematic analysis and summary of these new methods not only allow the understanding of the advantages and disadvantages of each method but also grasp the causes affecting the therapeutic effect, so as to provide a scientific basis for the future treatment strategy of dermatitis and psoriasis.

2. Overview of psoriasis and dermatitis

2.1. Definition and clinical features of psoriasis

Psoriasis is a common skin disease, with its manifestation involving many factors such as immunity, environment, and genetics, which is difficult to define clearly. Its most common description is a skin disease characterized by red scales. Psoriasis vulgaris, the most common form of psoriasis, usually occurs on the scalp, elbows, and knees [1]. It is red, swollen, and covered with silvery-white scales. There are many types of psoriasis, such as joint disease, pustular type, erythroderma type, etc., and the clinical manifestations and course of disease differ among the types.

Psoriasis is characterized by intense itching and discomfort, which often cause great distress to patients in their daily lives [2]. The severity of the disease fluctuates, and the symptoms worsen in the cold season for some patients. Although psoriasis is not life-threatening, its chronic, relapsing nature makes its management and treatment a long-term challenge.

In terms of pathophysiology, the pathogenesis of psoriasis involves a variety of cells and molecules, including keratinocytes, T lymphocytes, dendritic cells, and various cytokines. These immune cells and inflammatory factors interact, resulting in the abnormal proliferation of epidermal cells and the persistence of inflammatory response, forming the typical pathological features of psoriasis. Researchers have confirmed that a deeper understanding of its causes and pathophysiology has led to the development of a new generation of targeted therapies [3]. This significantly expands the diversity of psoriasis treatment and brings more options to patients.

For psoriasis, the difference in skin condition is generally used as the basis for diagnosis, and sometimes it is necessary to perform further skin fluid biological examination for diagnosis [4]. However, since psoriasis exhibits varying manifestations, the accurate diagnosis and classification of the condition depend on physicians with strong practical experience and detailed professional knowledge. Treatment strategies may vary based on the types of psoriasis, and efforts are often made to design an individualized treatment plan based on the patient's specific conditions and lifestyle habits.

2.2. Definition and clinical features of dermatitis

Dermatitis is an inflammatory skin reaction caused by various internal and external factors, classified into acute, subacute, and chronic stages. Its clinical features are skin erythema, pruritus, blister, exudation, scab, and scale, accompanied by different degrees of burning and stinging sensation. Acute dermatitis is characterized by obvious swelling and blistering, where exudation is more common, while chronic dermatitis is characterized by dry skin, thickening, and lichenoid lesions [5]. Dermatitis can be triggered by many factors, including genetic factors, environmental stimuli, allergic reactions, and autoimmune abnormalities [6]. Among them, external allergens such as pollen, animal fur, chemicals, and local stimuli such as friction, scratching, etc., are common triggers. The occurrence of dermatitis may be related to the abnormal immune system response of the individual, and some patients will also have an excessive immune response in the face of minor irritation, resulting in impaired skin barrier function [7]. Clinically, dermatitis is classified according to the cause, course, and symptoms, such as contact dermatitis, atopic dermatitis, seborrheic dermatitis, and atopic dermatitis [8]. Due to its wide range of incidence groups and variable clinical manifestations, the diagnosis and treatment of dermatitis require a comprehensive analysis of the patient's history, signs, and necessary skin examination results.

2.3. Traditional treatments for psoriasis and dermatitis

Medicine has traditionally focused on three main treatment paths for psoriasis or dermatitis: local therapy,

systemic therapy, and phototherapy [9]. The treatment goal is merely to relieve the disease, improve the skin quality, and delay the development of the disease. Local therapy is generally the initial treatment option for psoriasis and dermatitis and is most effective in mild to moderate patients [9]. Topical creams are medications such as corticosteroids, vitamin D derivatives, and tar-like agents, which primarily suppress inflammation and cell overgrowth. Although topical treatments have fewer side effects, long-term use may induce excessive skin atrophy or unpleasant irritation.

For moderate to severe patients, systemic treatment is indispensable. Systemic drugs, such as methotrexate, cyclosporine, and acitretin, mainly suppress the activity of the immune system and reduce the excessive immune response. These systemic drugs can greatly improve symptoms, but long-term use may lead to serious side effects and cause damage to vital organs such as the liver and kidney, so it is necessary to select the treatment carefully under the doctor's guidance.

Phototherapy, another traditional treatment, focuses on applying ultraviolet light to the affected area to reduce cell growth and the inflammatory response. This type of therapy is usually used to treat moderate to severe psoriasis and dermatitis and is especially effective in patients who do not respond to local or systemic therapies. However, it should also be noted that phototherapy may increase the chance of skin cancer, thus it needs to be used with caution, professional execution, and signing.

3. New therapeutic methods and research progress

3.1. Application of biological products in the treatment of psoriasis and dermatitis

Biologic drugs have shown excellent efficacy in the repair process of psoriasis and dermatitis and have rightly received the attention of society [7]. This class of drugs is mainly based on biotechnology as a means to produce drugs, including monoclonal antibodies, fusion proteins, etc. These drugs can be targeted to alter the disease-associated biological indicators or immune pathways to adjust the body's immune response.

In psoriasis repair, biologic drugs act by inhibiting specific cytokines or their receptors based on tumor necrosis factor (TNF-α), interleukin (IL-17), and IL-23 to restrict the pathological immune response. These drugs include etanercept, adalimumab, secukinumab, and guselkumab. After multiple clinical trials, the functional performance of these biologic products is excellent. They can not only significantly improve the pathologies of psoriasis skin lesions but also reduce the number of disease recurrences to a certain extent, thus greatly improving patients' quality of life [10]. Biologic products have also achieved significant efficacy in the treatment of dermatitis. For atopic dermatitis and other diseases related to the overreaction of the immune system, biologic products have a significant inflammatory remission effect through the intervention of related cytokine pathways. For example, drugs such as dupilumab, which targets IL-4 and IL-13, are effective in reducing skin lesions and relieving itching, and their safety is better than that of traditional immunosuppressants.

The use of biologics not only optimizes treatment strategies for psoriasis and dermatitis but also provides new options for patients who do not respond well to conventional therapies. Although biologics have shown good efficacy and tolerability, their high cost and potential long-term safety issues need to be further explored and addressed in future studies. Through in-depth studies of the mechanism of action of biologics and their performance in different patient populations, it can provide stronger support for clinical practice and point the way for the development of new drugs.

3.2. Application of small-molecule targeted drugs in the treatment of psoriasis and dermatitis

In recent years, the application of small-molecule targeted drugs in the treatment of psoriasis and dermatitis has attracted extensive attention in the scientific research community. By targeting specific molecules or signaling pathways, this class of drugs has shown excellent potential in the management of therapeutic effects and side effects. In the treatment of psoriasis, small-molecule targeted drugs such as JAK inhibitors, PDE4 inhibitors, etc., have shown significant effects. JAK inhibitors reduce skin inflammation by inhibiting the activity of Janus kinase and blocking cytokine signaling [11]. By inhibiting the function of phosphodiesterase 4, PDE4 inhibitors increase the content of cyclic adenosine phosphate in cells and indirectly slow down the inflammatory response. These drugs significantly reduce systemic side effects while relieving symptoms compared to conventional topical or systemic immunosuppressants.

In the treatment of dermatitis, small-molecule targeted drugs also show a good application prospect. Dermatitis usually involves complex inflammatory signaling pathways, and small-molecule drugs can regulate these signaling pathways through highly specific mechanisms to reduce inflammation and skin lesions. Studies have shown that patients using small-molecule targeted drugs have achieved significant improvements in inflammation control and skin recovery, and their efficacy is significantly better than traditional methods.

The above progress indicates that small-molecule targeted drugs in the treatment of psoriasis and dermatitis not only provide a new idea of disease management but also broaden the possibility of clinical application. Further optimization and safety evaluation of these drugs are critical in future studies.

3.3. Application of cell transplantation in the treatment of psoriasis and dermatitis

Cell transplantation has shown significant potential in the treatment of psoriasis and dermatitis. Studies have shown that by transplanting healthy cells, the normal function of the skin can be effectively restored, thereby improving disease symptoms. In the treatment of psoriasis, stem cell transplantation has shown good efficacy by repairing the skin barrier and regulating the immune response, while in the treatment of dermatitis, cell transplantation can reduce the inflammatory response and promote skin healing [12]. Although the study has a limited sample size, available clinical trial data point to the potential of cell transplantation to improve treatment outcomes and reduce side effects. The innovation and development of cell transplantation technology are expected to further enhance the breadth and depth of its application in the treatment of skin diseases and provide new ideas and directions for future treatment.

4. Comparison of therapeutic effects and future trends of new therapeutic methods

4.1. Comparison of therapeutic effects between new and traditional treatment methods

The new treatment has shown more significant efficacy than traditional methods in treating psoriasis and dermatitis. Traditional treatments, such as topical glucocorticoids and immunosuppressants, have short-term symptom relief effects, but their long-term use may lead to drug resistance, side effects, and relapse in patients, significantly limiting the durability of the efficacy. In contrast, novel therapeutic approaches such as biologics, small-molecule targeting drugs, and cell transplantation have shown superior therapeutic efficacy.

By precisely interfering with key proteins or immune pathways in the pathological process, biologics can significantly improve patients' symptoms and reduce recurrence rates. Most of these drugs have high selectivity and low systemic side effects, making them safer for long-term use [13]. Small-molecule targeted drugs act on the molecular basis of the disease through specific targets, take effect quickly, and can reduce the adverse reactions

brought by traditional drugs in precision treatment. Cell transplantation, in which healthy cells are introduced to repair diseased tissue, offers an effective alternative for some patients who are resistant to drugs.

Clinical studies have shown that these new treatments are superior to traditional therapies in improving skin lesions, reducing inflammation, and lowering recurrence rates, and they also show significant advantages in improving patients' quality of life and prolonging symptom remission. Although the current cost of new treatment options may be higher, their long-term efficacy and potential health benefits undoubtedly provide more possibilities for patients and clinical choices. As novel treatments continue to develop, these technologies are expected to open up new directions for the management of psoriasis and dermatitis.

4.2. Analysis of advantages and disadvantages of new treatment methods

The application of new treatment methods in the treatment of psoriasis and dermatitis has shown higher efficacy and fewer side effects than traditional methods. These new approaches also have their advantages and disadvantages. Biologics are highly specific and can target specific pathological mechanisms for treatment, reducing the impact on healthy cells with relatively few side effects. However, its price is high, and long-term use may lead to adverse reactions such as immune system disorders. The production and storage conditions of biologic products are strict, and the economic burden on patients is large.

Small-molecule targeted drugs have a high therapeutic effect by designing specific molecular structures and accurately acting on specific cell locations to block related signaling pathways. The ease of oral administration of these drugs improves patient compliance. Some small-molecule drugs may cause resistance problems when used for a long time, and some patients may experience side effects such as abnormal liver function. The research and development cycle of small-molecule targeted drugs is long, and the cost is high.

Cell transplantation technology offers a breakthrough approach for the treatment of refractory psoriasis and dermatitis. By transplanting healthy cells, damaged skin tissue can be repaired, providing a long-lasting healing effect. Cell transplantation involves complex ethical and technical issues, such as the acquisition of donor cells and immune rejection after transplantation. Transplantation is inherently risky, limiting its potential for widespread use.

Although these novel therapies show excellent therapeutic potential, their advantages and disadvantages still need to be weighed in practical applications to achieve the best treatment results and patient comfort.

4.3. Development prospects and research direction of novel therapeutic methods

New therapeutic methods show promising prospects in the study of psoriasis and dermatitis. The research and development of biologic products continues to deepen, and more drugs for different targets are developed through improved genetic engineering technology, which is expected to improve the therapeutic effect. Small-molecule targeted drugs are becoming a research hotspot due to their oral convenience and easy mass production. Future research and development will focus on reducing drug costs and optimizing drug mechanisms of action to achieve higher clinical availability. Cell transplantation technology provides a new idea of regenerative therapy, and in-depth study of the long-term survival rate and immune rejection of grafts *in vivo* is the key to its development. At present, the combined treatment strategy combining a variety of new therapies is gradually showing its potential, and improving the overall treatment effect through a synergistic effect will become an important direction of future research. These explorations not only open up new ways to treat diseases but also lay the foundation for the realization of personalized medicine, which is expected to change the traditional treatment landscape and improve patients' quality of life.

5. Conclusion

This paper systematically reviewed and summarized the new treatment methods for psoriasis and dermatitis in detail, from the classical drug treatment to the current biologic products, small-molecule targeted drugs, and the latest cell transplantation and other treatment methods, the main purpose of which is to find a more effective treatment with fewer side effects. The emergence of new therapeutic methods has greatly improved the treatment effect of psoriasis and dermatitis and has far-reaching significance for improving patients' quality of life. However, despite the significant progress in the therapeutic effect of various new therapies, there are still some problems that need to be further solved, such as the long-term efficacy and side effects of new therapeutic drugs. In addition, due to the popularization and promotion of treatment methods taking a certain time, the current promotion degree of new treatment methods and their popularity in the market need to be improved. This also poses new challenges for our future research. In general, the new treatment strategy provides a new idea and direction for the treatment of psoriasis and dermatitis, and the main research direction in the future will tend to solve issues concerning the side effects, long-term effects, and popularization of the new treatment strategy, in order to continuously improve the treatment effect and improve patients' quality of life.

Disclosure statement

The authors declare no conflict of interest.

References

[1] Li M, Li W, 2019, Psoriatic Dermatitis: A New Disease? Chinese Journal of Dermatology and Venereology, 36(03): 362–366.

[2] Liu J, Chen Y, Qian W, et al., 2019, Bimekizumab, a Novel Drug for the Treatment of Psoriasis. Journal of Clinical Pharmacotherapy, 19(09): 18–22.

[3] Jiang J, Chen H, 2019, Biotherapy for Psoriasis in Children. Bulletin of Dermatology, 37(05): 496–502.

[4] Yu C, Wang G, 2019, Small-Molecule Targeted Drugs: A New Option for the Treatment of Psoriasis. Chinese Journal of Dermatology, 55(09): 747–751.

[5] Zhu W, Sun X, Hu X, 2019, Research Progress of Targeted Drugs for the Treatment of Psoriasis. Chinese Pharmacy, 30(04): 542–547.

[6] Colonna C, Bortoluzzi P, Cavalli R, 2023, Dupilumab Treatment for Severe Atopic Dermatitis in Children and SARS-CoV2 Infection: A Combination of Triggers for Psoriasis. Journal of the European Academy of Dermatology and Venereology, 37(5): e568–e569.

[7] Fahmy LM, Kwinta BD, Schreidah CM, et al., 2023, Topical Mechlorethamine for the Treatment of Psoriasis: A Report of Two Cases and Literature Review. Dermatology and therapy, 13(2): 617–627.

[8] David E, Czarnowicki T, 2023, The Pathogenetic Role of Th17 Immune Response in Atopic Dermatitis. Current Opinion in Allergy and Clinical Immunology, 2023(5): 23.

[9] Su Z, Zeng Y, Dupilumab-Associated Psoriasis and Psoriasiform Manifestations: A Scoping Review. Dermatology, 239(4): 646–657.

[10] Fu XY, Lufei C, Liu X, et al., 2020, Compound for Treating Autoimmune Skin Diseases Caused by Inflammation,

and Use Thereof, EP20200799197, EP3964212A1, viewed December 16, 2024.

[11] Fujimoto R, Kataoka Y, 2022, Psoriasis-Like Eruptions Developed in an Atopic Dermatitis Patient Treated with Dupilumab. Journal of Cutaneous Immunology & Allergy, 5(6): 231–232.

[12] Marko M, Pawliczak R, 2023, Resveratrol and Its Derivatives in Inflammatory Skin Disorders—Atopic Dermatitis and Psoriasis: A Review. Antioxidants, 12(11): 1954.

[13] Dinish US, Yew YW, Vinod Ram K, et al., 2023, Non-Invasive Biochemical Analysis and Comparison of Atopic Dermatitis and Psoriasis Skin Using Handheld Confocal Raman Spectroscopy. Journal of Biophotonics, 16(12): e202300191.