Journal of Biosciences and Medicines, 2025, 13(3), 284-292
https://www.scirp.org/journal/jbm
ISSN Online: 2327-509X
ISSN Print: 2327-5081

A Review of the Research Progress and Application of Skin Care Ointments in Chronic Eczema Treatment

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How to cite this paper: Zhang, L. and Huang, F.Q. (2025) A Review of the Research Progress and Application of Skin Care Ointments in Chronic Eczema Treatment. *Journal of Biosciences and Medicines*, **13**, 284-292.
https://doi.org/10.4236/jbm.2025.133022

Received: February 17, 2025
Accepted: March 17, 2025
Published: March 20, 2025

Abstract

This paper provides a comprehensive review of the research progress and application of skin care ointments in the treatment of chronic eczema. Chronic eczema, a prevalent and frequently recurring inflammatory skin condition, significantly impacts patients' quality of life. While traditional therapeutic agents, such as compound triamcinolone acetonide cream, demonstrate certain efficacy, they also present limitations. Skin care ointments, with their distinct advantages, have garnered increasing attention in the treatment of chronic eczema. This article details the pathogenesis of chronic eczema, the characteristics and limitations of conventional therapeutic drugs, and primarily discusses the mechanisms of action, clinical application outcomes, and future research directions of skin care ointments. The aim is to provide a more comprehensive theoretical foundation and treatment strategy for the clinical management of chronic eczema.

Keywords

Chronic Eczema, Skin Care Ointment, Compound Triamcinolone Acetonide Cream, Pathogenesis, Therapeutic Effect, Beirunshu Medical Skin Care Dressing, Cost-Effectiveness

1. Introduction

Chronic eczema is a common chronic inflammatory skin disease in dermatology. Its incidence has been increasing significantly in recent years, seriously affecting the physical and mental health and quality of life of patients [1]. The clinical manifestations of this disease are complex and diverse, including skin itching, erythema, papules, blisters, exudation, lichenification, etc., and the course of the dis-

ease is long and prone to recurrence, causing great pain and distress to patients [2].

At present, there are many clinical treatments and drugs for chronic eczema, but there is no specific means to completely cure it [3]. Traditional therapeutic drugs such as compound triamcinolone acetonide cream can relieve symptoms in the short term, but long-term use has many adverse reactions [4]. With the increasing attention paid to skin health and the increasing demand for natural and mild skin care products, the application of skin care ointments in the treatment of chronic eczema has gradually received attention. In recent years, the formula of skin care ointments has been continuously developed and optimized, and more and more ingredients with unique efficacy have been used in them, such as Beirunshu medical skin care dressing, which contains carbomer, glycerin, oligosaccharides and other ingredients, and has shown potential advantages in moisturizing, anti-inflammatory, and repairing the skin barrier. However, there are still some gaps in the current research on skin care ointments in the treatment of chronic eczema, such as the mechanism of action has not been fully clarified, there is a lack of large-scale clinical studies to verify its efficacy and safety, and the quality of different products varies. This article aims to comprehensively review the relevant research on skin care ointments in the treatment of chronic eczema to fill these research gaps and provide a more scientific basis for clinical treatment.

2. Pathogenesis of Chronic Eczema

The pathogenesis of chronic eczema is complex, involving a variety of factors and resulting from the interplay between internal and external influences.

2.1. Internal Factors

2.1.1. Genetic Factors

Genetic factors significantly contribute to the pathogenesis of chronic eczema. Research indicates that mutations or polymorphisms in specific genes are linked to increased susceptibility to chronic eczema. These genes may affect processes such as skin barrier function, immune regulation, and inflammatory response.

2.1.2. Immune Dysfunction

The disruption of the immune system in patients is a critical factor in the development of chronic eczema. An imbalance within the immune system results in excessive immune responses to various antigens, releasing numerous inflammatory mediators including histamine, leukotrienes, and cytokines, which cause skin inflammation and itching. Additionally, abnormalities in immune cell functions, such as the improper activation and differentiation of T lymphocytes, also contribute to the pathogenesis of chronic eczema.

2.1.3. Compromised Skin Barrier Function

The integrity of the skin barrier is essential for maintaining the skin's normal

physiological functions [5]. In chronic eczema patients, the skin barrier function is compromised, characterized by a thinned stratum corneum, decreased lipid content, and a deficiency in natural moisturizing factors. This leads to increased transepidermal water loss, heightened sensitivity to external stimuli, and a propensity to initiate inflammatory responses.

2.2. External Factors

2.2.1. Environmental Factors

Environmental factors are one of the significant triggers for the onset of chronic eczema. Common environmental factors include climate changes, air pollution, chemical irritants, and microbial infections. For instance, cold and dry climates can lead to skin moisture loss, exacerbating dryness and itching; allergens such as pollen and dust mites in the air can provoke allergic reactions, leading to eczema flare-ups; contact with chemicals such as detergents, cosmetics, and metals may also cause skin allergies and inflammation.

2.2.2. Lifestyle Habits

Poor lifestyle habits are closely related to the development of chronic eczema. Practices such as excessive skin cleansing, the use of irritating skincare products, skin scratching, and irregular eating habits can all compromise the skin's barrier function, triggering or worsening chronic eczema.

2.2.3. Psychological Factors

Psychological factors, including stress, anxiety, and depression, significantly contribute to the onset and progression of chronic eczema. These factors can influence immune system function via the neuroendocrine system, resulting in heightened inflammatory responses in the skin. Additionally, they can affect sleep quality and lifestyle habits, further exacerbating the condition.

3. Traditional Therapeutic Agents—Compound Triamcinolone Acetonide Cream

Compound Triamcinolone Acetonide Cream is frequently employed in clinical settings for the management of chronic eczema and is classified under glucocorticoid medications.

3.1. Mechanism of Action

Glucocorticoids exhibit potent anti-inflammatory, anti-allergic, and immunosuppressive effects. The primary mechanism involves binding to intracellular glucocorticoid receptors to form a hormone-receptor complex. This complex then translocates into the nucleus, where it binds to specific DNA sequences to regulate gene transcription. This process inhibits the synthesis and release of inflammatory mediators, thereby alleviating inflammatory responses. Additionally, glucocorticoids can suppress the activation and proliferation of immune cells, thereby reducing the intensity of immune responses.

3.2. Clinical Efficacy

In clinical practice, compound triamcinolone acetonide cream can rapidly alleviate symptoms such as itching, erythema, and swelling in patients with chronic eczema, reducing skin inflammatory responses and promoting skin repair. For patients with mild to moderate chronic eczema, this medication generally demonstrates good therapeutic efficacy [6].

3.3. Limitations

Despite its therapeutic benefits, the prolonged use of compound triamcinolone acetonide cream is associated with several limitations. Primarily, extended use of glucocorticoids can result in adverse effects such as skin atrophy, thinning, capillary dilation, and pigmentation, which compromise both the aesthetic and health aspects of the skin [7]. Furthermore, chronic application may lead to the development of skin resistance and dependence, complicating the condition's management and hindering complete recovery. Additionally, glucocorticoids have the potential to suppress immune function, thereby increasing infection risks and posing significant health threats to patients. In the study of triamcinolone acetonide cream, Zhang Yongmei used RP-HPLC to simultaneously determine the contents of triamcinolone acetonide acetate, diphenhydramine hydrochloride and miconazole nitrate in triamcinolone acetonide cream [8]. Su Hua *et al.* conducted the prescription screening and stability study of triamcinolone acetonide cream [9].

4. Advances in Skin Care Ointment Research

4.1. Ingredients and Mechanism of Action

Taking Beirunshu medical skin care dressing as an example, it is composed of carbomer, glycerin, triethanolamine, isomaltose, glyceryl stearate/PEG-100 stearate, dimethicone, liquid paraffin, xanthan gum, propylparaben, methylparaben, phenoxyethanol and purified water.

4.1.1. Moisturizing Effect

Glycerin is a classic moisturizer that can absorb moisture from the air and retain it in the skin to prevent skin dryness. Carbomer can form a moisturizing film to reduce the evaporation of skin moisture. These ingredients work together to maintain the normal water content of the skin, help maintain the elasticity and softness of the skin, promote the metabolism of skin cells, and enhance the barrier function of the skin.

4.1.2. Anti-Inflammatory Effect

Isomaltose has the function of regulating the skin microecology, by promoting the growth of beneficial bacteria, inhibiting the growth of harmful bacteria, and reducing the production of inflammatory mediators, thereby alleviating skin inflammatory reactions. In addition, although some plant extracts are not mentioned in Beirunshu, extracts such as aloe vera and chamomile contained in some

skin care ointments have anti-inflammatory, antibacterial and antioxidant effects, which can relieve skin inflammation and itching.

4.1.3. Repair Skin Barrier

Dimethicone and liquid paraffin can form a protective film on the skin surface to prevent the invasion of external irritants, while replenishing lipids in the stratum corneum of the skin and repairing damaged skin barriers. Ingredients such as glyceryl stearate/PEG-100 stearate help promote the proliferation and differentiation of skin cells and accelerate skin repair and regeneration.

4.1.4. Regulate Skin Microecology

As a prebiotic, oligosaccharides can selectively promote the growth of beneficial bacteria (such as bifidobacteria, lactobacilli, etc.) on the skin surface, inhibit the growth of harmful bacteria, improve the skin microecological environment, and enhance the skin's immunity.

4.2. Clinical Application Effect

Numerous clinical studies indicate that skin care ointment is effective in treating chronic eczema.

4.2.1. Symptom Improvement

Skin care ointment is effective in relieving symptoms such as itching, erythema, papules, and lichenification in chronic eczema patients, thereby reducing their discomfort. When compared to traditional glucocorticoid medications, skin care ointment is milder in its action. While it may have a slower onset, its effects are more prolonged and it is less likely to cause adverse skin reactions.

4.2.2. Enhancement of Quality of Life

By alleviating the skin symptoms associated with chronic eczema, skin care ointment contributes to enhancing patients' quality of life. Improvements are observed in sleep quality, daily activities remain unrestricted, and psychological stress is alleviated.

4.2.3. High Safety

Skin care ointments are typically formulated with natural ingredients or mild chemicals, which tend to cause less skin irritation and have a lower incidence of adverse reactions. This makes them particularly suitable for special populations such as children, pregnant women, the elderly, as well as patients who are allergic or intolerant to conventional medications.

4.3. Comparative Study with Compound Triamcinolone Acetonide Cream

Several studies have conducted comparisons between skin care ointments and compound triamcinolone acetonide cream, indicating that skin care ointments offer certain advantages in the management of chronic eczema.

4.3.1. Treatment Efficacy Rate

According to certain studies, patients treated with skin care ointment exhibit a higher treatment efficacy rate compared to those treated with compound triamcinolone acetonide cream. This superior efficacy is likely due to the skin care ointment's ability not only to alleviate symptoms of skin inflammation but also to repair the skin barrier through various mechanisms and regulate the skin's microecosystem, thus offering a more comprehensive approach to managing chronic eczema.

4.3.2. Symptom Score

Post-treatment evaluations reveal that patients using skin care ointment have significantly lower symptom scores than those using compound triamcinolone acetonide cream. This suggests that skin care ointment provides more pronounced improvements in the skin symptoms of chronic eczema patients.

4.3.3. Incidence of Adverse Reactions

The occurrence of adverse reactions is notably lower with skin care ointment compared to compound triamcinolone acetonide cream. Adverse effects such as skin atrophy and capillary dilation, which are potential side effects of compound triamcinolone acetonide cream, are less common in patients using skin care ointment, highlighting its superior safety profile and tolerability for long-term use.

4.4. Cost-Effectiveness Analysis

From the perspective of cost-effectiveness, the price of compound triamcinolone acetonide cream is relatively low, but due to its many adverse reactions, long-term use may require additional medical expenses to deal with these adverse reactions, such as skin repair treatment. Skin care ointments, such as Beirunshu medical skin care dressings, although the price per tube may be relatively high, but because of its high safety and few adverse reactions, patients do not need to pay extra costs for dealing with adverse reactions, and can effectively reduce the number of recurrences of the disease, in the long run, it may have better cost-effectiveness. In addition, for some special populations, such as children and pregnant women, the safety advantage of skin care ointments is more prominent, avoiding the potential risks that may be caused by the use of glucocorticoid drugs and reducing unnecessary medical expenses.

5. Advantages and Disadvantages of Skin Care Ointments in Chronic Eczema Treatment

5.1. Advantages

5.1.1. Natural and Gentle

Skin care ointments predominantly incorporate natural ingredients, resulting in minimal irritation to the skin and a reduced likelihood of allergic reactions. These ointments offer high safety and are suitable for patients across various skin types and age groups.

5.1.2. Multi-Target Mechanism

By employing mechanisms such as moisturizing, anti-inflammatory effects, skin barrier repair, and modulation of skin microecology, these ointments provide a comprehensive approach to treating chronic eczema. They not only alleviate symptoms but also fundamentally enhance skin health, thereby reducing the risk of disease recurrence.

5.1.3. Safety of Long-Term Use

The product is safe for long-term use, as it is unlikely to lead to drug resistance or dependency. Additionally, it does not cause severe adverse reactions such as skin atrophy or capillary dilation, making it advantageous for the patient's prolonged treatment and recovery.

5.1.4. High Cost-Effectiveness

Although the short-term cost may be high, in the long run, it can reduce the cost of disease recurrence and adverse reactions, and has good cost-effectiveness.

5.2. Limitations

5.2.1. Slower Onset of Action

Compared to glucocorticoid medications, the effect of skin care ointments is milder, potentially resulting in a longer onset time. This may not be suitable for patients with severe symptoms who require immediate relief.

5.2.2. Absence of Standardized Criteria

The current market presents a diverse array of skin care ointment products, characterized by inconsistent ingredients and quality. The absence of standardized quality criteria and regulations poses challenges for clinical selection and application.

5.2.3. Need for Further Research on Mechanisms of Action

While skin care ointments have demonstrated efficacy in clinical settings, their precise mechanisms of action remain incompletely understood. Continued comprehensive research is necessary to enhance guidance for clinical use and product development.

6. Future Research Directions

6.1. Comprehensive Investigation of Mechanisms of Action

It is necessary to conduct a comprehensive investigation into the mechanisms of action of the various components present in skin care ointments. This research aims to elucidate the specific targets and signaling pathways involved in the treatment of chronic eczema, thereby offering a more robust theoretical foundation for their clinical application.

6.2. Optimization of Formulations and Development of New Products

Based on the pathogenesis and clinical needs of chronic eczema, we aim to opti-

mize the formulation of skin care ointments and develop more efficient, safer, and more targeted products. For instance, personalized skin care ointments will be developed for different types and severities of chronic eczema.

6.3. Conducting Large-Scale Clinical Research

We will undertake multicenter, large-sample, randomized controlled clinical trials to further validate the efficacy and safety of skin care ointments in the treatment of chronic eczema, thereby providing stronger evidence for their clinical application and promotion.

6.4. Enhancing Quality Control and Standard Development

Enhance the quality control measures for skin care ointment products and establish unified quality standards and guidelines to ensure product quality and safety, thereby protecting patients' rights to safe medication.

6.5. Cost-Effectiveness Evaluation Research

Carry out more cost-effectiveness evaluation research on skin care ointments to provide more comprehensive economic data support for the selection of clinical treatment options and help doctors and patients make more reasonable decisions.

7. Conclusion

Chronic eczema is a common inflammatory skin disease that seriously affects the quality of life of patients. Traditional therapeutic drugs such as triamcinolone acetonide cream have certain efficacy, but they have many limitations. Skin care ointments, such as Beirunshu medical skin care dressing, have shown good application prospects in the treatment of chronic eczema due to their natural mildness, multi-target effects, good long-term safety and good cost-effectiveness. However, skin care ointments still have problems such as relatively slow onset of effect, lack of unified standards and in-depth research on their mechanism of action. In the future, it is necessary to further study its mechanism of action, optimize the formula, carry out large-scale clinical research, strengthen quality control and standard setting, and carry out cost-effectiveness evaluation research to promote the widespread use of skin care ointments in the treatment of chronic eczema and provide patients with safer and more effective treatment options.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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