

# Clinical Application of Two Allergy-Relieving Formulas Replacing Topical Glucocorticosteroids in the Treatment of Cosmetic Dermatitis

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**Abstract:** In clinical practice, the use of allergy-relieving water agent made from gentian root extract and moisturizing factor can effectively treat erythema, burning, edema, pain, itching and other problems caused by stress reaction in patients with cosmetic dermatitis. The cream preparation made from feverfew and purslane extracts can effectively deal with the problems of dryness, desquamation and barrier damage caused by the loss of water content in the skin of patients with cosmetic dermatitis; and the use of formula preparations rapidly recovers the patient's skin to normal physiological function and avoids side effects resulted from use of topical glucocorticosteroids, the only viable treatment of cosmetic dermatitis in the past.

## 1 Introduction

The science of cosmetics usage and skin care has not yet been fully popularized. When the basic physiological function of the skin is impaired, cosmetic dermatitis may occur under the stimulation of cosmetics containing ingredients such as essence, coloring matter, preservative, active ingredient and the like[1]. Excessive use of topical glucocorticosteroids is common in patients with facial disability and itching discomfort, who pursue pure therapeutic effects. The resulted loss of skin barrier function thereby triggers hormone-dependent dermatitis, the formation of red blood, skin loosening, premature aging and other problems.

## 2 Preparation and Selection of the Formula

The pathogenesis of cosmetic dermatitis is characterized by allergic reactions driven by mast cells and basophils in the body's immune system. Symptoms include dermal telangiectasia, increased glandular secretion, erythema, edema, itching, burning and pain[2]. In recent years, studies have revealed that medical skin care products made from plant extracts with anti-inflammatory and vasoconstrictive effects can significantly improve skin problems such as erythema, edema, itching, burning and pain caused by cosmetic dermatitis[3].

(1) The gentian root extract and moisturizing factor were made into soothing conditioning liquid, as shown in Table 1.

**Table 1** Ingredients of Soothing Conditioning Liquid Preparation

Ingredient	Refined water	Gentian root extract	1,2-Propanediol	Butanediol	Beta-glucan	Palmitoyl tetrapeptide-7	Octanoyl hydroxamic acid	Phenoxyethanol
Weight(%)	86.45	3.00	3.00	3.00	2.00	2.00	0.50	0.05

Preparation Method: The above components, all water-soluble, were stirred and uniformly dispersed.

(2) The feverfew and purslane extracts were made into soothing repair cream, as shown in Table 2.

**Table 2** Preparation Ingredients of the Soothing Repair Cream

	Ingredient	Weight (%)		Ingredient	Weight (%)
	Oil phase	Cetearyl glucoside		2.00	Water phase
Hydrogenated lecithin		2.00	Glycerin	5.00	
Isooctyl palmitate		6.00	1,2-Butanediol	5.00	
Caprylic/capric acid and glycerides		3.00	Dipotassium glycyrrhizinate	0.50	
PPG-17		3.00	Sodium hyaluronate	0.20	
1618 Alcohol		1.50	Trehalose	1.00	
Tocopherol acetate		1.00	Beta-glucan	0.50	
\		\	EDTA disodium	0.05	
\		\	Phenoxyethanol	0.05	
\		\	Feverfew extract	1.00	
\	\	Purslane extract	1.00		

Preparation Method: The oily raw material was heated to 85 °C, and the aqueous raw material was heated to 72 °C. Ingredients were stirred separately until all were dissolved. The oil phase was added into the water phase while stirring, and the mixture was homogenized at a rotation speed of 20,000 min. The formed cream was cooled to room temperature (15 °C to 30 °C), and finally 100 g of soothing anti-allergy cream was obtained.

### (3) Selection of the Preparations

Preparation Selection Principle: Appropriate preparation was selected according to the physiological state of the skin, in order to promote the permeation and absorption of the active ingredients and rapidly reduce the dermatitis reaction[4].

The First Stage: In the burning and edema of cosmetic dermatitis, the epidermis was opened, and the stratum corneum was loosened. At this time, the use of allergy-relieving water agent could enhance skin permeation and absorption. With the anti-inflammatory agents in the gentian root extract, the symptoms of itching, burning and edema were first relieved. After the inflammation subsided, the soothing component of the purslane bisabolol in the allergy-relieving water agent can reduce erythema and burning pain.

The Second Stage: After experiencing the skin stress reaction, the erythema and edema subsided, and a large amount of scales were produced on the epidermis. The skin was returning to normal function at this time. Correspondingly, the secretion of skin oil was insufficient in this state, and if the protective measures were not taken in time, allergies may occur under the stimulation of exogenous ingredients. Dry skin may also appear due to excessive water loss from the epidermis. Clinically, the cream made from feverfew and purslane extracts can simulate the structure of sebum membrane, exert antibacterial and anti-inflammatory function, control the loss of epidermal water and protect the health of the epidermal barrier. This regimen can replace the treatment of topical glucocorticosteroids, avoiding the skin's dependence on such hormones, protecting the skin structure and exerting long-lasting effects.

## 3 Clinical Trials and Data Comparison

### 3.1. Clinical Sample Selection

The samples were from 50 patients with cosmetic dermatitis in the Skin Care Division from May 2018 to May 2019.

Selection Criteria: 1 with a history of cosmetic use; and 2 meeting the diagnostic criteria for cosmetic dermatitis.

Exclusion Criteria: 1 diet allergies; and 2 symptoms similar to cosmetic dermatitis, such as rose acne.

Selected Observation Cases: 48 females and 2 males, aged 18-45 years old, symptoms mainly occurred in cosmetic contact areas. Sensitized cosmetic types include Whitening and Freckle-removal (33 cases), Acne-removal and Scar-removal (7 cases), Anti-aging and Lifting (3 cases) Oil Control and Fat Control (7 cases) products.

### 3.2. Clinical Application Method

Application Procedures: The patient used the allergy-relieving water agent made from the gentian root extract three times in the morning and evening everyday in a spray manner, about 3 ml for each time. After three days of use and when the erythema, edema, burning and itching subsided, the allergy-relieving cream made from feverfew and purlane extracts was added. After water cleansing, it was applied twice in the morning and evening. It was applied in a small amount to the face, forehead and cheeks, and in a relatively larger amount on spots with scales. After being preheated in the palms, the cream was softened and stretched to promote the soothing and absorption of the cream and skin.

Note: During the treatment of dermatitis, the cosmetics used before should be discontinued. Water only is used to wash the face, and high-quality paper towels are used to sip up the water to avoid rubbing with a towel. Exposure to high temperature environments, such as saunas and hot springs, should be avoided, for high temperature leads to accelerated blood flow of the epidermis and aggravated facial inflammation. Also should be avoided is contact with public swimming pools containing TCCA disinfectants, which may aggravate facial allergic reactions. After stress response of the skin, a large amount of scales will be produced, which should be allowed to fall naturally. Exfoliation before the skin is fully healed will cause the skin to break and produce coloration and scarring.

Experimental Period: The treatment period is 10 days. After the treatment, it is recommended to use the cream in a long-term manner to maintain the health of the skin barrier.

### 3.3. Data Comparison

Final Result: 50 patients were selected, of which 34 were cured, 9 were markedly effective, 6 were effective, and 1 was ineffective. The overall effective rate was 98%. No patients showed adverse reactions such as photosensitivity or allergies. The result was shown in Table 3.

**Table 3** Data Comparison

Number of cases	Time	Cured	Markedly effective	Effective	Ineffective	Total effective rate (%)
50	10 days	34	9	6	1	98

## 4 Conclusions

In this paper, the preparation principle and healing effect of the allergy-relieving water agent made from gentian root extract and the allergy-relieving cream made from feverfew and purslane extracts were evaluated and verified from the perspectives of the pathogenesis of skin cosmetic dermatitis and changes in the physiological state of skin diseases, combined with the principles and composition of formula preparations and clinical validation. These two preparations can not only effectively treat erythema, edema, burning, itching, pain and other problems in the cosmetic dermatitis stress response, but also help the scaling reaction after dermatitis and maintain the health of the epidermal barrier. In the clinical treatment of cosmetic dermatitis, it can replace the use of topical glucocorticosteroids to avoid the side effects caused by such hormone therapeutic products, and make the skin more healthy.

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