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Research Article

Formulation And Evaluation of Eczema Cream

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ABSTRACT

Atopic dermatitis is often referred to as eczema, a chronic inflammatory skin disease. The formulation and evaluation of eczema creams is aimed at developing topical products that can reduce eczema symptoms such as swelling, inflammation, pain and redness of the skin layer. This study focuses on the preparation of emollient-based creams with active ingredients known for their anti-inflammatory, moisturizing and skin-saving properties. Creams were evaluated using the cream's physical properties such as viscosity, texture and pH values, as well as microbiological stability and durability in vitro and in vivo. Certain types of stimulation testing and clinical research were also conducted to ensure the safety and efficacy of the product. The results of this study show that the prescribed cream offers important relief offering potential alternatives to victims looking for appropriate topical effects with minimal negative outcomes. AD is often referred to as “itch that rashes” because the itching starts and then the skin rash follows as a result of scratching the rash which develops as a effect of a skin pigmentation wound, and occurs between fat deposition and pigmentation in the dark areas of eczema. The disease is attributed to a constructed interaction between genetic predisposition and natural factors that drive infants, childhood and adulthood in three stages.

INTRODUCTION

Definition: Atopic dermatitis (AD) is primarily called eczema. This is a non-contact skin condition

that can remain for a long period of time. This disease often causes red and swollen marks on the skin surface, leading to discomfort and inflammation within the body.

Brand Name	Type	Main Ingredient	Use	Availability
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Cortizone-10	Steroid	Hydrocortisone 1%	Reduces itching and inflammation	Over-the-counter
Eucerin Eczema Relief	Non-steroid	Colloidal Oatmeal, Ceramides	Moisturizes, soothes eczema-prone skin	Over-the-counter
Aveeno Eczema Therapy	Non-steroid	Colloidal Oatmeal	Relieves dryness and itchiness	Over-the-counter
Elidel	Non-steroid (Rx)	Pimecrolimus	Suppresses immune response in eczema	Prescription required
Betnovate	Steroid (Rx)	Betamethasone	Treats severe inflammation and itching	Prescription required

Types:

Eczema Type	Application	Use/Effect
Atopic Dermatitis	Apply twice daily on affected areas	Reduces chronic itching and flare-ups, especially in folds or creases
Contact Dermatitis	Apply thinly to the rash area after removing irritant/allergen	Eases redness, inflammation, and itch caused by allergic reactions or irritants
Hand Eczema	Use after washing and drying hands; apply sparingly	Soothes irritation from frequent handwashing or chemical exposure
Neurodermatitis	Apply on thickened, scaly patches	Helps break the itch-scratch cycle and softens lichenified skin
Nummular Eczema	Apply on coin-shaped lesions 1–2 times a day	Reduces inflammation and itch in round patches; use with moisturizers for best results
Stasis Dermatitis	Apply only under medical advice	May reduce redness and itch but needs caution due to skin thinning risk in lower legs
Dyshidrotic Eczema	Dab gently over blisters (not open ones)	Helps with inflammation, but avoid applying if skin is cracked or blistered without doctor's advice

Eczema Types and Treatment Applications

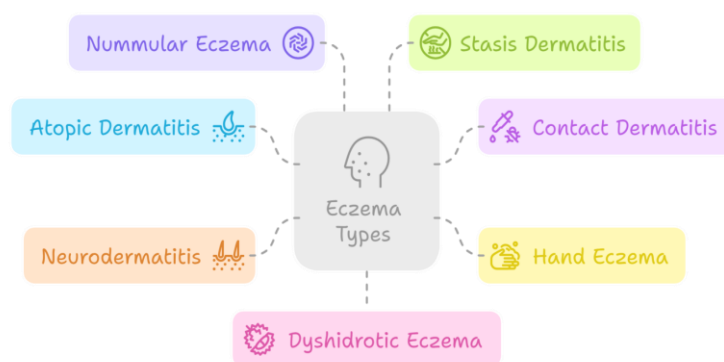


Fig No. 01: - Types Of Eczema Cream

Symptoms:

1. The recurrent symptoms of eczema involves:
2. Dried, ominous spots on skin
3. Stiffen, discoloured skin
4. Open, crusted, or weeping sores
5. Skin flushing
6. Itching
7. Small, raised bumps on skin
8. Skin eruption



Fig No. 02: - Eczema Effect On Skin

Causes:

1. There is no distinct causes of eczema but few typical causes may include:
2. Genetics: A ancestry of eczema, asthma, or allergies significantly raises the threat of growing eczema.
3. Immune System Dysfunction: In eczema, an heated or dysregulated immune system responds to allergic reactions with inflammation, causing some of the skin symptoms.
4. Environmental factors: Factors like allergens, irritants, climate, and pollutants can activate or increase eczema, impacting skin health and comfort.
5. Food: Consumption of some food items can cause spread of eczema.
6. Dry skin: When skin becomes very dry, it may lead to cracking, bleeding and itching, making it more vulnerable to irritation and infection.
7. Stress: This is not a direct cause of eczema, but it can make the symptoms worse.
8. Microorganisms: While eczema itself isn't caused by microorganisms, they can play a significant role in aggravating and infecting eczema, with *Staphylococcus aureus* being a particularly common culprit.
9. Scratching and Rubbing: Over time, continuous scratching or rubbing can cause the marks on skin to worsen.

Cream:

Pharmaceutical creams are semisolid dosage forms containing one or more medicinal agents dissolved or dispersed in a suitable cream base, primarily used for topical skin products and sometimes rectally or vaginally. They are used to repair various skin conditions, deliver medications, and provide protection or relief. In recent times. Creams are emulsions of either the O/W or W/O type. Creams are defined as “viscous liquid or semi-solid emulsions of either the oil-in-water or water-in-oil type.

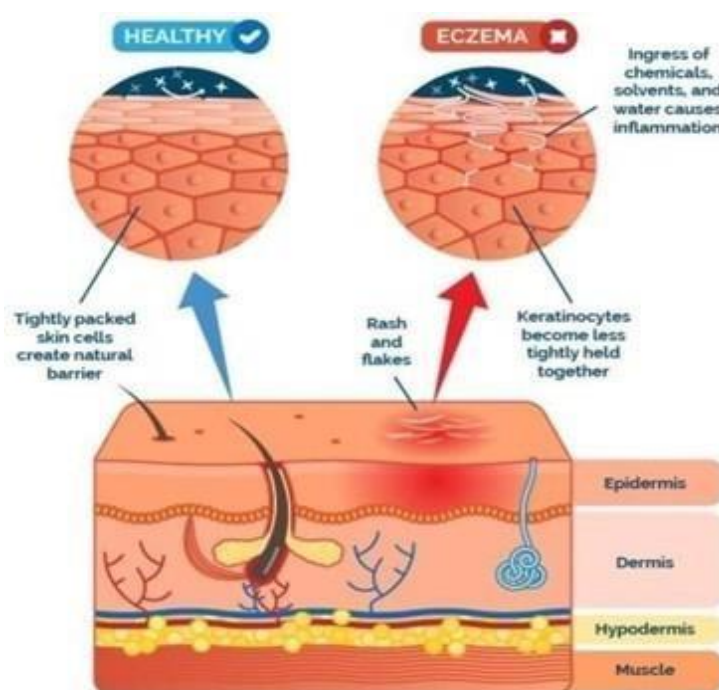


Fig No. 03: - Eczema Condition

Treatment And Diagnosis:

Treatment

1. Topical Treatments

- Moisturizers: Importance in managing dryness.
- Topical Corticosteroids: For inflammation control.
- Topical Calcineurin Inhibitors: Alternatives to steroids.

2. Systemic Treatments

- Antihistamines: To relieve itching.
- Immunosuppressants: (e.g., cyclosporine) for severe cases.
- Biologic Therapies: (e.g., Dupilumab) for moderate to severe eczema.

3. Non-Pharmacological Approaches

- Lifestyle Modifications: Avoiding triggers, bathing practices.

- Education and Support: Importance of patient education.

4. Phototherapy Types: Recommended for moderate to severe cases.

- Ultraviolet B (UVB)
- Narrowband UVB therapy

Diagnosis:

1. Clinical History: A whole medical history is essential.

- Skin biopsy test
- Triggers (e.g., allergens, irritants)

1. Physical Examination: Dermatologists assess the skin's appearance, distribution, and seriousness of lesions.
2. Allergy Testing: Scratch tests or patch tests may be operated to spot particular allergens that could trigger eczema.
3. Laboratory Tests: While not routinely used, blood tests can measure levels of

Immunoglobulin E (IgE), which may be elevated in individuals with eczema.

Factors Affecting Eczema Cream :

There are several factors affecting AD,

Environmental Factors: These involves revelation to antigens, pollen, mold, and pet dander, insects. Other eco factors include frosty and moistureless air, increase in warmth and dampness in nature and exposure to vapours from flames, automobiles, and the pollutants from the factories and industrial wastes.

Irritants: These include the use of unsuitable scrubs, perfumes, cleansers, soaps, detergents, shampoos, and solvents.

Food allergies: Some of the most common food allergens that can activate eczema include wheat, soy, dairy, peanuts, seafood, eggs, citrus foods consumption and seed (nuts), etc.

Hormonal changes: The AD infection can get worst at the time of pregnancy, perimenopause, and menopause which may lead to several serious infection.

Stress: It can induce inflammation in the body, which can worsen eczema although it does not cause the eczema directly.

Genetics: Genes involved in the immune response, such as interleukin (IL)-4, IL-13, IL31, signal transducer and activator of transduction

(STAT)3, and Fc fragment of immunoglobulin (Ig)E receptor Ig (FCER1G), have been associated with eczema.

Methods of preparation of eczema cream :

Here are some methods for preparing eczema creams:

Double boiler

Melt cocoa butter in a double boiler or heat-safe bowl over simmering water. Then, add olive oil and stir, remove from heat, and let cool slightly. Add aloe vera gel and stir until combined. For additional soothing properties, add rosehip oil.

Slab technique

Heat liquid paraffin and beeswax in a glass beaker at 75° C. In a separate beaker, dissolve borax and methylparaben in distilled water and heat to 75° C. Slowly add the aqueous phase to the oily phase. Add aloe vera gel, neem extract, and tulsi extract, and stir until smooth. Add a few drops of rose oil for fragrance.

Oil in water (O/W) emulsion

Dissolve emulsifier and oil-soluble components in the oil phase. Dissolve preservatives and water-soluble components in the aqueous phase. Heat both phases to 75° C. Then, gradually add the aqueous phase to the oil phase while agitating constantly until the emulsifier cools.

Cosmetic Formulation Techniques Overview

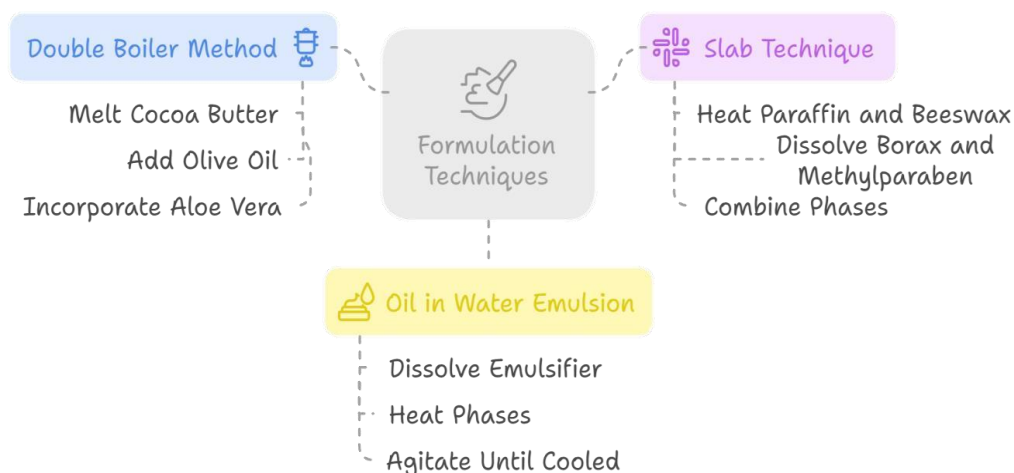


Fig No. 04:- Formulation Techniques Of Eczema Cream

MATERIAL AND METHODOLOGY:

• Ingredients:

There are various ingredients used to manufacture eczema cream they are as fallows;

1. Virgin coconut oil
2. Psoralea oil
3. Shea butter
4. Vitamin E capsule
5. Rose water
6. Methyl paraben
7. Beeswax

Process of preparation of eczema cream :

Step 1: Melt Base Ingredients

Materials:

- Shea butter
- Beeswax
- Virgin coconut oil
- Psoralea oil
- Heat-safe bowl (glass or stainless steel)

- Double boiler setup or microwave

Method:

Double Boiler (Recommended):

- Fill a pot with 2–3 inches of water and bring to a gentle simmer.
- Place the bowl containing Shea butter, Beeswax, virgin coconut oil and Psoralea oil over the pot (ensure the bowl doesn't touch the water).
- Stir occasionally until fully melted (~5–10 minutes).

Microwave (Alternative):

- Heat in 15-second intervals at 50% power, stirring between each, until melted (typically 30–60 seconds total).

Safety:

- Never leave melting oils unattended.



- Avoid direct heat (e.g., stovetop without a double boiler) to prevent scorching or combustion.

Step 2: Cool the Mixture

- Remove from heat and let cool until **warm to the touch** (~40–45°C or 104–113°F).
- **Purpose:** Prevents degradation of heat-sensitive additives (e.g., vitamin E, rose water).

Consistency Check:

The mixture should be fluid but not hot enough to steam.

Step 3: Add Secondary Ingredients Materials :

- Vitamin E capsule (pierced)
- Rose water
- Preservative (e.g., methylparaben)
- Whisk or spatula

Method:

1. Return the warm mixture to the double boiler on **low heat** (water barely simmering) to maintain liquidity.
2. **Add in this order while stirring:**
 - **Vitamin E:** Squeeze contents from the capsule, stir for 30 seconds.
 - **Rose Water:** Drizzle slowly to prevent separation; emulsify thoroughly.

- **Preservative:** Sprinkle evenly and stir until fully dissolved (~1–2 minutes).

Key Tip:

If the mixture thickens too quickly, briefly reheat (5–10 seconds in the double boiler).

Step 4: Solidification & Storage:

Container Prep:

Use a sterilized glass jar or airtight container (wash with hot soapy water, then rinse with boiling water or alcohol).

Pouring & Curing:

1. Pour the mixture immediately into the container while still liquid.

2. Room-Temperature Solidification:

- Leave uncovered in a cool, dust-free area for 4–6 hours.
- Avoid refrigeration (can cause uneven texture or graininess).

Post-Solidification:

- Cover tightly and store in a dark, cool place (e.g., medicine cabinet). Shelf life: ~6 months (with preservative).

Formulation Table:

Table No. 01: - Formulation Table

Ingredient	Quantity	Function
Shea Butter	12 gm	Emollient, helps to moisturize and protect skin
Virgin Coconut Oil	15 ml	Emollient, anti-inflammatory, helps with skin healing
Psoralea Oil	10 ml	Skin healing, anti-inflammatory
Vitamin E (Capsule)	2 capsules	Antioxidant, helps to repair skin, moisturizing



Rose Water	1 ml	Skin toner, soothing, anti-inflammatory
Methylparaben	0.5 gm	Preservative to prevent bacterial and fungal growth
Beeswax	5 gm	Moisturization, soothing, and protecting the skin.

RESULT:

The present study focused on the formulation and evaluation of a herbal eczema cream. Various evaluation parameters were assessed to determine the quality and effectiveness of the formulated cream. The evaluation parameters were coming under results, like the physical evaluation of herbal

cream, pH of eczema cream, spreadability, washability, nonirritancy test, viscosity. This cream formed is non-greasy in nature and easily removable after application. The formulation was nonirritancy and not harmful to the skin.

Evaluation Tests for Eczema Cream:

Table No. 02:- Evaluation Tests

S. No	Evaluation Test	Purpose	Result
1	Colour	To observe the visual properties of the cream	Creamish Yellowish
2	pH Measurement	To ensure skin compatibility	5.8 (Basic)
3	Viscosity	To check flow property and application consistency	Viscous
4	Spreadability	To assess ease of application on skin	9.5 g.cm/s
5	Odour	Used to check the smell or fragrance of the formulation	Mild and Pleasant
6	State	Used to observe or describe the physical condition or appearance	Semi Solid
7	Consistency	Used to know the texture	Smooth
6	Homogeneity	To ensure uniform mixing of all ingredients	Uniform
7	Skin Irritation Test	To assess safety and potential for irritation	Non-irritant
8	Washability	To evaluate ease of removal from skin	Easily washable
9	Extrudability	To measure how easily cream comes out of the container	Easily extrudable
10	After feel	Used to know how skin looks, feels and reacts after using the product	Emollient
11	Skin Retention Study	To estimate the amount of drug retained in skin	4 to 6 hours

Evaluation Tests for Eczema Cream

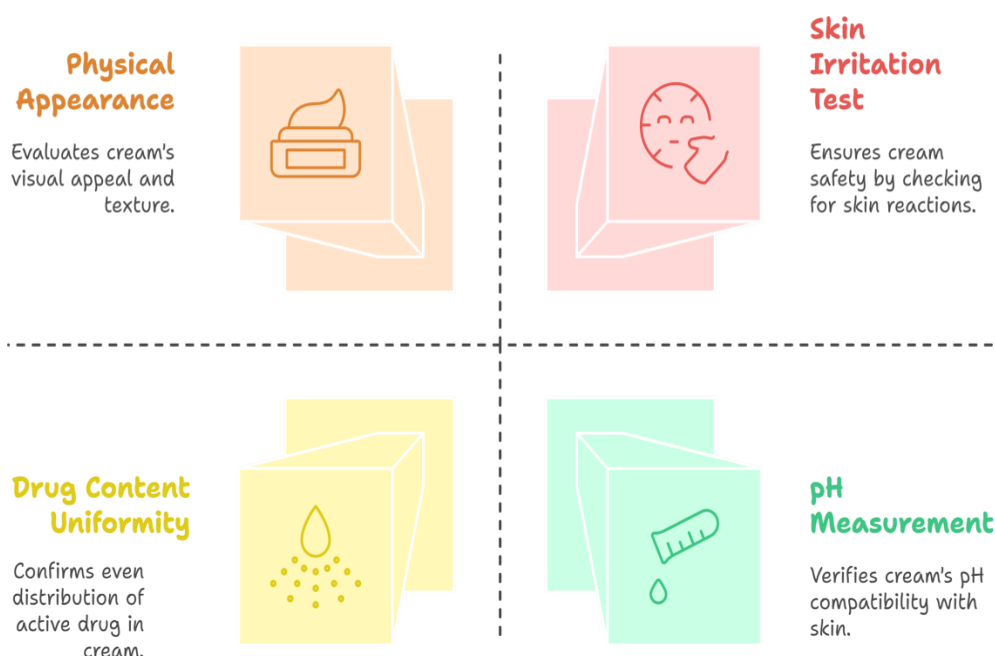


Fig No. 05: - Types Of Evaluation Tests For Eczema Cream Preparation

CONCLUSION:

The eczema cream formulation and analysis were performed through the stringent assessment of key parameters such as viscosity, pH, application site, stability of the API, condition of the skin, and patient preference. Through optimization of these parameters, we were able to successfully formulate a calming anti-itching cream that delivers on desired standards of performance and patient needs.

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REFERENCES

1. Lachman L., Lieberman H.A., Kanig J.L. The Theory and Practice of Industrial Pharmacy. 3rd Ed. Varghese Publishing House; 1991.
2. Ansel H.C., Allen L.V., Popovich N.G. Pharmaceutical Dosage Forms and Drug Delivery Systems. 8th Ed. Lippincott Williams & Wilkins; 2005.
3. Remington. The Science and Practice of Pharmacy. 21st Ed. Lippincott Williams & Wilkins; 2005.
4. Rowe R.C., Sheskey P.J., Quinn M.E. Handbook of Pharmaceutical Excipients. 6th Ed. Pharmaceutical Press; 2009.



5. Williams H.C., Grindlay D.J.C. What's new in atopic eczema? An evidence-based review. *Br J Dermatol.* 2010;163(3):587-596.
6. Cork M.J., Danby S.G., et al. Epidermal barrier dysfunction in atopic dermatitis. *J Invest Dermatol.* 2009;129(8):1892-1908.
7. Mohammed M.I., Hirani F., et al. Formulation and Evaluation of Herbal Cream Containing *Curcuma longa* Extract. *International Journal of Pharmaceutical Sciences and Research.* 2013;4(8):2962-2969.
8. Barel A.O., Paye M., Maibach H.I. *Handbook of Cosmetic Science and Technology.* 3rd Ed. CRC Press; 2009.
9. Arora R., et al. Formulation and Evaluation of Herbal Creams for the Treatment of Eczema. *Journal of Pharmacognosy and Phytochemistry.* 2017;6(2):410-414.
10. Shai L., et al. The Anti-Inflammatory Activity of Plant Extracts Used for the Treatment of Eczema. *African Journal of Biotechnology.* 2008;7(13):173-176.
11. Kadhim M.J., et al. Formulation and Evaluation of Herbal Cream Containing *Aloe vera* for the Treatment of Eczema. *Research Journal of Pharmacy and Technology.* 2021;14(1):319-324.
12. Dureja H., Kaushik D., et al. Cosmeceuticals: An Emerging Concept. *Indian Journal of Pharmacology.* 2005;37(3):155.
13. Indian Pharmacopoeia. Government of India, Ministry of Health and Family Welfare. The Controller of Publications; New Delhi, 2014.
14. British Pharmacopoeia. Medicines and Healthcare Products Regulatory Agency (MHRA). 2020.
15. USP 43-NF 38. United States Pharmacopoeia-National Formulary. United States Pharmacopoeial Convention; 2020.
16. Saini S., et al. Formulation and Evaluation of Herbal Cream for Treatment of Eczema. *Asian Journal of Pharmaceutical Research and Development.* 2018;6(3):60-64.
17. Kapoor V.P. *Herbal Cosmetics for Skin and Hair Care.* Natural Product Radiance. 2005;4(4):306-314.
18. Martin A. *Physical Pharmacy: Physical Chemical Principles in the Pharmaceutical Sciences.* 4th Ed. Lippincott Williams & Wilkins; 1993.
19. WHO Guidelines on Good Manufacturing Practices (GMP) for Pharmaceutical Products. World Health Organization.
20. Sharma P.P. *Cosmetic - Formulation, Manufacturing and Quality Control.* 4th Ed. Vandana Publications; 2014.

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