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Research

FORMULATION AND EVALUATION OF ANTI -ACNE HERBAL CREAM

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Abstract

Acne vulgaris is one of the most common skin disorders affecting adolescents and adults, often resulting from bacterial infection, excess sebum production, and inflammation. The present study aims to formulate and evaluate a herbal cream incorporating natural ingredients with proven anti-acne, anti-inflammatory, and antimicrobial properties. Aloe vera, turmeric (Curcuma longa), neem (Azadirachta indica), and honey were selected as active herbal ingredients based on their traditional and scientific relevance in acne treatment. The herbal extracts were incorporated into a cream base using standard formulation techniques. The prepared formulation was evaluated for its physicochemical properties including pH, viscosity, spread ability, homogeneity, stability, and microbial load. In vitro antimicrobial activity was assessed against common acne-causing bacteria such as Propionibacterium acnes and Staphylococcus aureus. The results indicated that the cream was stable, non-irritant, and exhibited significant antimicrobial activity, particularly against P. acnes. The herbal ingredients showed synergistic effects, providing a promising alternative to synthetic anti-acne treatments with reduced side effects. This study supports the potential of herbal formulations as effective, safe, and natural remedies for acne management.

Keywords: Acne, Bacterial infection, Inflammation, Standard formulation techniques, Acne causing bacteria.

INTRODUCTION

ACNE:

Acne vulgaris is a common dermatological condition that primarily affects adolescents and young adults. It is characterized by inflammation of the sebaceous glands and hair follicles, leading to the formation of comedones, papules, pustules, and in severe cases, cysts. Conventional acne treatments often involve synthetic drugs such as benzoyl peroxide, retinoids, and antibiotics, which may cause side effects like skin irritation, dryness, and resistance development. In recent years, there has been growing interest in the use of herbal formulations for acne treatment due to their natural origin, lower risk of side effects, and multiple therapeutic properties. Medicinal plants such as neem (Azadirachta indica), tea tree oil (Melaleuca alternifolia), turmeric (Curcuma longa), aloe vera, and green tea (Camellia sinensis) are known for their antibacterial, anti-inflammatory, antioxidant, and wound healing properties, making them effective in acne management.

This study aims to formulate and evaluate a stable, safe, and effective anti-acne herbal cream using selected plant extracts with proven therapeutic benefits.

SEMISOLID DOSAGE FORM:

A semisolid dosage form is a topical preparation that retains its shape when not under stress but can flow or spread when applied. These formulations are used mainly for external application to the skin, rectum, vagina, or nasal mucosa.

TYPES OF SEMISOLID DOSAGE FORM:

1. Ointments
2. Creams
3. Gels
4. Pastes
5. Jellies
6. Poultices

CREAM:

Cream Is a Semi-Solid Emulsion Made of Water and Oil, Designed to Protect, Nourish, Or Enhance the Appearance of the Skin. It's One of The Most Common Skincare Products, Used to Moisturize, Smooth, And Treat the Skin's Surface.

MATERIALS AND METHODS

Materials:

Aloe vera extract, Turmeric extract, Neem extract, Honey

Cream base: Bee's wax, Stearic Acid.

Method:

Composition (per 100 g of cream)

Ingredients	Purpose	Quantity (g)
Aloe vera gel	Soothing, Anti inflammatory	10
Turmeric extract	Anti-bacterial, Anti-inflammatory	2
Neem extract	Anti-inflammatory, Anti-microbial	3
Honey	Moisturizer	5
Stearic acid	Emulsifier, thickener	5
Cetyl alcohol	Emollient, Stabilizer	2
Glyceryl monostearate	Emulsifier	3

Glycerin	Humectant	5
Propylene glycol	Solvent	3
Liquid paraffin	Emollient	4
Bees wax	Base for oil phase	5
Methyl paraben	Preservative	0.2
Propyl paraben	Preservative	0.02
Distilled water	Aqueous base	q.s to 100g

🧪 Preparation Method

🔬 Fusion Method (Melting Method) – Preparation of Semisolid Dosage Forms

The fusion method, also known as the melting method, is a common technique used in the preparation of semisolid dosage forms such as ointments, creams, and suppositories.
In this method, the ingredients are melted, mixed, and cooled under controlled conditions to form a homogeneous semisolid product.

⚗️ Principle:

The method is based on **melting all or some of the components**, **mixing them thoroughly**, and then **allowing the mixture to cool** until it solidifies or becomes semisolid.
This ensures **uniform distribution of the drug** and a **smooth, consistent texture**.

Step	Description
1. Melting	Melt ingredients in order of melting point
2. Addition of drug	Add drug to molten base
3. Mixing	Stir continuously for uniformity
4. Cooling	Cool slowly with stirring
5. Packaging	Fill into containers before solidification

Phase A: Oil Phase

1. Mix stearic acid, cetyl alcohol, bees wax and liquid paraffin in a beaker.
2. Heat to 70–75°C with gentle stirring.

Phase B: Aqueous Phase

1. In another beaker, mix glycerin, propylene glycol, methylparaben, propylparaben, and distilled water.
2. Heat to 70–75°C.
3. Add triethanolamine to adjust pH (around 5.5–6).
4. Add Aloe vera gel and stir well at 40–45°C.

Emulsification

1. Slowly add oil phase (A) into aqueous phase (B) with continuous stirring.
2. Stir until a uniform cream forms and cool to room temperature.

Addition of Actives

1. Add turmeric extract, neem extract and honey slowly into the cooled cream base (below 40°C).
2. Mix thoroughly until homogenous.

⚖️ **Evaluation Parameters**

- pH: 5.5–6.0 (skin-friendly)
- Appearance: Smooth, yellowish cream
- Viscosity: Should be semi-solid, spreadable
- Microbial stability: Check for growth over 4 weeks
- Patch test: Conduct for safety on human skin

✅ **Storage**

- Store in cool, dry place, preferably in air-tight opaque containers.
- Shelf life: ~6 months (if properly preserved and stored).

RESULT AND DISCUSSION

The formulated herbal cream exhibited desirable physical and chemical properties. The pH was skin-compatible, and the cream had good spread ability and consistency. Antimicrobial testing confirmed its effectiveness against acne-causing bacteria. The absence of irritation during patch testing further proved its safety for topical use. The synergistic effect of the herbal components provided enhanced therapeutic benefits without the side effects seen in synthetic drugs.

CONCLUSION

The formulated anti-acne herbal cream demonstrated promising results in terms of stability, safety, and efficacy. The use of natural ingredients such as Aloe vera, Turmeric, Neem, and Honey provided synergistic antimicrobial, anti-inflammatory, antioxidant, and skin-soothing properties, which are essential for acne treatment. The cream showed desirable physicochemical characteristics, including appropriate pH, smooth texture, non-greasiness, and good spread ability. Evaluation studies confirmed its non-irritant nature and significant anti-acne activity against Propionibacterium acnes and Staphylococcus aureus. Based on the findings, it can be concluded that herbal creams are a safe, cost-effective, and efficient alternative to synthetic acne treatments, with minimal side effects. Further clinical trials are recommended to establish long-term effectiveness and patient acceptability.

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