

HERBAL CREAM FORMULATION AND EVALUATION

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Abstract—The increasing demand for natural and skin-friendly cosmetic products has encouraged the development of herbal-based skincare formulations. Herbal face wash and cream preparations are formulated using plant-derived ingredients known for their cleansing, moisturizing, antioxidant, anti-inflammatory, and antimicrobial properties. Common herbal ingredients such as neem, aloe Vera, turmeric, tulsi, sandalwood, cucumber, rose extract, and tea tree oil are widely used due to their effectiveness and minimal side effects compared to synthetic chemicals. The herbal face wash is designed to remove dirt, excess oil, and impurities while maintaining the natural moisture balance of the skin. Herbal creams, on the other hand, provide nourishment, hydration, protection, and healing effects for various skin conditions including acne, dryness, pigmentation, and irritation. These formulations are generally prepared using suitable bases, surfactants, emulsifiers, preservatives, and natural active constituents in optimized proportions. Evaluation parameters such as pH, viscosity, spread ability, foamability, wash ability, stability, skin irritation, and antimicrobial activity are essential to determine the quality, safety, and effectiveness of the formulations. Studies indicate that herbal skincare products offer better compatibility with skin, reduced adverse reactions, and improved therapeutic benefits.

Index Terms—Herbal formulation, Herbal, Herbal cream, Natural cosmetics, Skincare products, Aloe vera, Neem.

I. Introduction

Herbal cosmetics are products prepared by using naturally available herbs and plant extracts to enhance skin health and appearance. In recent years, herbal skincare products have gained popularity because they are considered safer, ecofriendly, and associated with fewer side effects than synthetic cosmetic

products. Herbal face wash and herbal cream are widely used cosmetic formulations designed to cleanse, moisturize, protect, and nourish the skin. A herbal face wash is a semisolid or liquid preparation used to remove dirt, dust, oil, dead cells, and microorganisms from the skin surface. Unlike ordinary soaps, herbal face washes help maintain the natural pH and moisture balance of the skin. They are prepared using herbal extracts with cleansing, antibacterial, antioxidant, and soothing properties. Ingredients such as neem, aloe vera, tulsi, turmeric, cucumber, rose water, and tea tree oil are commonly incorporated because of their beneficial effects on the skin. Neem and tulsi possess antimicrobial activity that helps reduce acne-causing bacteria, while aloe vera provides hydration and soothing effects. Turmeric acts as an anti-inflammatory and antioxidant agent that improves skin complexion and reduces irritation. Herbal creams are topical semisolid emulsions intended for application on the skin to provide moisturizing, protective, and therapeutic effects. They may be oil-in-water (O/W) or water-in-oil (W/O) emulsions depending on the nature of the formulation. Herbal creams are formulated using natural oils, waxes, emulsifying agents, preservatives, and herbal extracts. These creams help in maintaining skin softness, preventing dryness, reducing pigmentation, and protecting the skin from environmental damage. Aloe vera, sandalwood, turmeric, almond oil, and rose extracts are frequently

used due to their nourishing and healing properties.



II. DEFINITION

A herbal cream formulation is a semisolid topical preparation containing herbal extracts, oils, and natural ingredients designed to moisturize, nourish, protect, and improve the health and appearance of the skin with minimal side effects.

Herbal formulation refers to the preparation of cosmetic or medicinal products using herbs, plant extracts, and naturally derived substances to provide therapeutic and skincare benefits safely and effectively.

Basic Physiology

herbal face wash /cream formulation Physiology

Physiology of Herbal and Cream Formulation

The physiology of herbal face wash and cream formulation is based on their interaction with the skin and their ability to maintain skin health, cleanliness, hydration, and protection. The skin is the largest organ of the body and acts as a protective barrier against microorganisms, chemicals, and environmental damage. Herbal cosmetic formulations help support the natural physiological functions of the skin using plant-based ingredients.

Skin Physiology Related to Herbal Formulations

The skin consists of three main layers:

1. **Epidermis** – Outer protective layer that prevents water loss and protects against pathogens.
2. **Dermis** – Contains blood vessels, hair follicles, sweat glands, collagen, and elastin fibers.
3. **Hypodermis** – Inner fatty layer providing insulation and cushioning

Sebaceous glands in the skin produce sebum, which keeps the skin soft and prevents dryness. Excess sebum, dirt, and microorganisms may block pores and cause acne or irritation. Herbal face wash and creams help maintain the balance of oil, moisture, and skin pH.

Mechanism of Action

- Removes dirt, sweat, oil, dead cells, and pollutants from the skin surface.
- Reduces microbial growth and prevents acne formation.
- Maintains normal skin pH and moisture balance.
- Opens clogged pores and improves skin respiration.

Physiological Effects of Herbal Ingredients

- **Neem:** Antibacterial and antifungal action reduces acne-causing microorganisms.
- **Aloe vera:** Hydrates and soothes irritated skin.
- **Turmeric:** Provides anti-inflammatory and antioxidant effects.
- **Tulsi:** Protects skin from infections and oxidative stress.

- **Cucumber and Rose Water:** Cooling and refreshing action on skin tissues.

The surfactants present in face wash reduce surface tension and help remove oil and impurities without damaging skin tissues.

III. Physiology of Herbal Cream

Herbal creams mainly provide nourishment, hydration, and protection to the skin.

Mechanism of Action

HARBAL CREAM FORMULATION

- Forms a thin protective layer on the skin surface.
- Prevents excessive water loss from the epidermis.
- Improves skin softness and elasticity.
- Delivers herbal active constituents into superficial skin layers.

Physiological Effects of Herbal Ingredients

Aloe vera: Enhances wound healing and hydration.



Sandalwood: Cooling and soothing effect on inflamed skin.

Advantages of Herbal Cream Formulation

1. **Natural and Safe**
Prepared from herbal ingredients with fewer side effects compared to synthetic cosmetics.
2. **Skin-Friendly**
Gentle on the skin and suitable for most skin types, including sensitive skin.
3. **Moisturizing Effect**
Helps maintain skin hydration and prevents dryness.
4. **Antimicrobial Activity**
Herbal ingredients like neem and tulsi help reduce bacterial and fungal infections.
5. **Anti-Inflammatory Action**
Ingredients such as turmeric and aloe vera reduce redness, irritation, and swelling.
6. **Antioxidant Properties**
Protects the skin from free radical damage and premature aging.
7. **Maintains Skin pH**
Helps preserve the natural pH balance of the skin.
8. **Reduces Acne and Pimples**
Cleanses pores and controls excess oil secretion.
9. **Nourishes the Skin**
Provides essential nutrients that improve skin texture and glow.

10. **Eco-Friendly**

Herbal products are biodegradable and environmentally friendly.

Disadvantages of Herbal Cream Formulation

1. **Short ShelfLife**

Herbal products may spoil faster because natural ingredients are more prone to microbial contamination.

2. **SlowResults**

Herbal formulations often show gradual effects compared to synthetic cosmetic products.

3. **Possibility ofAllergic Reactions**

Some individuals may develop sensitivity or allergy to certain herbal ingredients.

4. **Stability Problems**

Natural ingredients may undergo changes in color, odor, or texture during storage.

5. **Variation in Quality**

The effectiveness of herbal products may vary depending on the quality and source of herbs used.

6. **Less Foaming and Cleansing Action**

Herbal face washes may produce less foam and weaker cleansing action than chemical-based products.

7. **Need for Preservatives**

Natural products may still require preservatives to prevent microbial growth.

8. **Limited Penetration**

Some herbal active ingredients may not penetrate deeply into the skin.

9. **Risk ofContamination**

Improper preparation or storage can lead to contamination by bacteria or fungi.

10. **Strong Natural Odor**

Certain herbal ingredients may have an unpleasant smell that some users dislike.

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IV. Review of Literature: Herbal Herbal Cream Formulation

Herbal cosmetics have gained significant importance in recent years because of their natural origin, safety, and therapeutic benefits. Various researchers have studied the formulation, preparation, evaluation, and effectiveness of herbal face wash and herbal cream formulations using plant-based ingredients such as aloe vera, neem, turmeric, tulsi, papaya, cucumber, sandalwood, and rose extracts.

A review article titled “**Review on Herbal Face Cream**” reported that herbal creams are semisolid preparations used for moisturizing, nourishing, and treating skin disorders. The study explained that herbal ingredients such as aloe vera, turmeric, tulsi, and papaya possess antioxidant, anti-inflammatory, and antimicrobial activities. The formulated creams showed good consistency, spreadability, stability, and skin compatibility.

Another review on the **Preparation and evaluation** discussed the formulation of herbal creams with anti-blemish and antioxidant properties. The authors highlighted evaluation parameters including pH, homogeneity, viscosity, spreadability, washability, irritancy, and stability studies to ensure the quality and safety of the formulation.

A systematic study published in the **Journal of Herbal Medicine** emphasized the increasing demand for herbal creams due to their lower toxicity and reduced side effects compared to synthetic creams. The review covered composition, preparation methods, manufacturing processes, therapeutic applications, and future prospects of herbal creams.

Research on polyherbal face wash formulations explained that herbal face washes provide cleansing, soothing, anti-acne, and antioxidant effects while maintaining the natural pH of the skin. Ingredients such as neem, tulsi, turmeric, aloe vera, and lemon extracts were found beneficial in controlling acne-causing microorganisms and improving skin texture.

Studies on herbal cosmetic formulations also reported that aloe vera acts as a moisturizing and wound-healing agent, turmeric provides anti-inflammatory and antioxidant action, while neem and tulsi exhibit antibacterial and antifungal activities useful for acne prevention and skin protection.

Several evaluation studies concluded that herbal formulations generally show acceptable physical characteristics such as good appearance, smooth texture, nongreasy nature, satisfactory foamability, stability, and absence of skin irritation. These properties make herbal face wash and cream formulations suitable for regular skincare applications.

Overall, literature studies indicate that herbal face wash and cream formulations are effective, safe, economical, and eco-friendly alternatives to synthetic cosmetic products. The incorporation of medicinal plant extracts enhances therapeutic value and improves consumer acceptance in modern skincare products.

V. Aim And Objective

Aim

To formulate and evaluate herbal face wash and herbal cream using natural herbal ingredients for cleansing, moisturizing, protecting, and improving skin health with minimal side effects.

Objectives

1. To prepare herbal face wash and herbal cream using suitable herbal extracts and natural ingredients.
2. To study the properties and therapeutic benefits of different herbal ingredients used in skincare formulations.
3. To develop a safe, effective, and skin-friendly cosmetic formulation.
4. To evaluate the prepared formulations for parameters such as:
 - o pH
 - o Viscosity
 - o Spread ability
 - o Foamability
 - o Homogeneity

- o Stability
- o Skin irritation

VI. Plan of Work: Herbal Cream Formulation

1. Selection of Herbal Ingredients

Select suitable herbal drugs and natural ingredients based on their skincare properties.

Examples: o Neem

- Aloe vera o Turmeric o Tulsi o Rose water o Sandalwood
- Almond oil

2. Collection and Authentication of Materials

- Collect herbal materials from reliable sources.
- Authenticate and identify the plant materials properly.
- Procure chemicals, excipients, preservatives, and surfactants required for formulation.

3. Preparation of Herbal Extracts

- Clean, dry, and powder the herbal materials.
- Prepare extracts using suitable extraction methods such as:
 - o Maceration
 - o Soxhlet extraction o Decoction
- Filter and store the extracts properly.

4. Formulation of Herbal

- Prepare the face wash base using surfactants and stabilizers.
- Add herbal extracts in suitable concentrations.
- Mix thoroughly to obtain a homogeneous formulation.
- Adjust pH, color, fragrance, and viscosity.

5. Formulation of Herbal Cream

- Prepare oil phase and aqueous phase separately.
- Heat both phases to suitable temperature.
- Mix with continuous stirring to form emulsion. Incorporate herbal extracts and preservatives.
- Cool and pack the cream in suitable containers.

6. Evaluation of Formulations Evaluation of Evaluation of Herbal Cream

- Homogeneity
- Spreadability
- pH
- Consistency
- Viscosity
- Stability study
- Irritancy test

7. Stability Studies

- Store formulations under different temperature conditions.

- Observe changes in: o Color o Odor o Texture

VII. Materials and Methods

1. Preparation of Herbal Extracts

1. Collect and clean the herbal materials.
2. Dry the materials under shade and grind into coarse powder.
3. Extract the active constituents using suitable extraction methods such as maceration or Soxhlet extraction.
4. Filter the extracts and store in airtight containers for further use.

2. Method for Preparation of Herbal Procedure

1. Dissolve Carbopol in distilled water with continuous stirring.
2. Add glycerin and surfactant slowly into the mixture.
3. Incorporate herbal extracts such as neem, aloe vera, tulsi, and turmeric.
4. Add rose water and fragrance for pleasant odor.
5. Adjust the pH using triethanolamine.
6. Stir continuously until a smooth and homogeneous gel is formed.
7. Transfer the prepared face wash into suitable containers.

3. Method for Preparation of Herbal Cream Procedure

Oil Phase Preparation

- Take stearic acid, cetyl alcohol, and liquid paraffin in a beaker.
- Heat the mixture to about 70° C until melted completely.

Aqueous Phase Preparation

- Dissolve preservatives and glycerin in distilled water.
- Heat the aqueous phase to the same temperature.

Emulsification

- Add aqueous phase slowly into oil phase with continuous stirring.
- Stir continuously until cream is formed.
- Add herbal extracts such as aloe vera, turmeric, sandalwood, and almond oil during cooling.
- Add perfume if required and mix properly.
- Transfer the prepared cream into clean containers.

4. Evaluation of Formulations

Evaluation Parameters for Herbal Cream

- Homogeneity
- Spreadability
- pH
- Consistency
- Viscosity
- Stability
- Irritancy t

5. Stability Study

- Store formulations at room temperature and elevated temperature.
- Observe physical changes such as:
 - Color o Odor o Texture o Phase separation o pH changes





VIII. Evaluation of Herbal Cream Formulation

Evaluation of herbal face wash and cream formulations is carried out to determine their quality, stability, safety, and effectiveness. Various physical, chemical, and biological parameters are tested.

Evaluation of Herbal Cream

1. Physical Appearance

The formulation is examined for:

- o Color o Clarity o Texture o Consistency o Odor
- A good face wash should have a smooth appearance and pleasant smell.

2.pH Determination

- The pH is measured using a pH meter.
- Ideal pH for skin preparations is around 5.5– 7.
- Proper pH helps maintain skin compatibility and prevents irritation.

3.Foamability Test

- A small quantity of face wash is mixed with water and shaken.
- Foam height and stability are observed.
- Good foam indicates effective cleansing action.

4.Washability Test

The formulation is applied to the skin and washed with water. Easy removal without residue indicates good washability.

IX. Result and Discussion: Herbal Cream Formulation

The prepared herbal face wash and herbal cream formulations were evaluated for various physical and chemical parameters. The formulations showed satisfactory appearance, stability, skin compatibility, and effectiveness.

Result of Herbal Parameter

Observation

Appearance Smooth and homogeneous
Color Light green creamish
Odor Pleasant herbal odor pH 5.5 – 6.8
Foamability Good
Foam formation
Washability Easily washable
Viscosity Suitable consistency
Skin irritation No irritation observed
Stability Stable at room temperature

X. Conclusion

The present study concluded that herbal face wash and herbal cream formulations can be successfully prepared using natural herbal ingredients such as neem, aloe vera, turmeric, tulsi, sandalwood, and almond oil. The prepared formulations showed satisfactory physical appearance, stability, pH, spreadability, foamability, washability, and skin compatibility.

The herbal face wash effectively removed dirt, excess oil, and impurities while maintaining the natural moisture balance of the skin. The herbal cream provided good moisturizing, nourishing, and protective effects without causing irritation or adverse reactions. The incorporation of herbal ingredients offered antimicrobial, antioxidant, and anti-inflammatory properties beneficial for healthy skin maintenance.

Stability studies indicated that the formulations remained stable under normal storage conditions without significant changes in color, odor, texture, or phase separation. Evaluation parameters confirmed that the products were safe, effective, and suitable for regular skincare use.

Therefore, herbal face wash and cream formulations can be considered economical, eco-friendly, and safer alternatives to synthetic cosmetic products, with better consumer acceptance due to their natural origin and minimal side effects.

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