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FORMULATION AND EVALUATION OF VANISHING HERBAL CREAM OF CRUDE DRUGS

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ABSTRACT:

The formulation and evaluation of vanishing herbal creams incorporating crude drugs present a promising avenue in cosmetic and pharmaceutical industries due to their potential benefits and consumer preference for natural products. This study aimed to develop a vanishing herbal cream utilizing crude drugs and assess its physicochemical properties, stability, and skin compatibility. A systematic formulation approach was employed, selecting crude drugs renowned for their therapeutic properties and compatibility with cream bases. Various combinations of crude drugs were prepared using suitable excipients to optimize the formulation for stability and sensory attributes. The physicochemical characteristics, including pH, viscosity, spreadability, and rheological properties, were assessed to ensure product quality and performance. Furthermore, stability studies under accelerated and real-time conditions were conducted to evaluate the cream's shelf-life and compatibility with storage conditions. The formulation's skin compatibility and irritation potential were determined through patch testing on human volunteers, ensuring safety and tolerability. The results demonstrated successful formulation of a vanishing herbal cream utilizing crude drugs with desirable physicochemical properties, including optimal pH, viscosity, and spreadability. Stability studies revealed satisfactory shelf-life under varied storage conditions, indicating the formulation's robustness. Additionally, skin compatibility testing exhibited negligible irritation potential, affirming the safety of the product for topical application.

Keywords: Crude drugs, cosmetic, skin, pH , stability

Introduction:

The burgeoning demand for natural and herbal products in the cosmetic and pharmaceutical industries has spurred a renewed interest in utilizing crude drugs in formulations. Crude drugs, derived from medicinal plants and botanical sources, offer a rich repertoire of bioactive compounds with potential therapeutic benefits. Among the various formulations gaining attention, vanishing herbal creams stand out for their lightweight texture, quick absorption, and skin-friendly attributes. Traditional herbal medicine systems have long recognized the healing properties of botanical extracts and plant-derived compounds. In recent years, scientific research has corroborated many of these claims, highlighting the efficacy of crude drugs in addressing various skin concerns such as inflammation, aging, and hyperpigmentation. Moreover, consumers increasingly seek alternatives to synthetic ingredients, gravitating towards natural formulations perceived as safer and environmentally sustainable. Formulating a vanishing herbal cream incorporating crude drugs presents a multifaceted challenge. It requires a delicate balance between selecting potent botanical ingredients, optimizing the formulation for stability and sensory attributes, and ensuring skin compatibility and safety. Additionally, the formulation process must adhere to regulatory standards and industry best practices to guarantee product efficacy and consumer trust. This study endeavors to address these challenges by systematically formulating and evaluating a vanishing herbal cream utilizing selected crude drugs. Through a comprehensive approach encompassing formulation optimization, physicochemical characterization, stability assessment, and skin compatibility testing, this research aims to contribute to the growing body of knowledge in natural product development. By harnessing the therapeutic potential of crude drugs and incorporating them into a vanishing herbal cream, this study seeks to offer a novel formulation that not only meets consumer demand for natural products but also delivers tangible skincare benefits. Ultimately, the insights gained from this research endeavor hold the promise of advancing the field of herbal cosmetics and expanding the repertoire of natural skincare solutions available to consumers.

Materials and Methods:

Material:

1. Crude Drugs: Selection of crude drugs based on their traditional medicinal uses and known therapeutic properties. Examples may include extracts of aloe vera, turmeric, neem, licorice, rosehip, chamomile, and calendula.
2. Cream Base:
   - Emollients: Such as stearic acid, cetyl alcohol, or glyceryl stearate, to provide a smooth texture and moisturizing effect.
   - Oils: Carrier oils like almond oil for their emollient and nourishing properties.

- Water: Purified rice water as a solvent and to adjust the consistency of the cream.
- Preservatives: Natural preservatives such as grapefruit seed extract or vitamin E to extend shelf-life.
- Emulsifiers: Non-ionic emulsifiers like cetearyl alcohol or polysorbate 80 to stabilize the oil-in-water emulsion.

3. Functional Ingredients:
   - Humectants: Hyaluronic acid, glycerin, or sorbitol to attract and retain moisture in the skin.
   - Antioxidants: Vitamin C, vitamin E, or green tea extract to protect the skin from oxidative stress and premature aging.
   - Skin-soothing Agents: Allantoin, oat extract, or panthenol to calm irritated skin and promote healing.
   - Fragrance: Essential oils or natural fragrances for a pleasant aroma.
4. Equipment:
   - Mixing Equipment: Stainless steel mixing vessels, homogenizers, or overhead stirrers for uniform blending of ingredients.
   - Heating Equipment: Water baths or jacketed vessels for heating and melting solid ingredients.
   - pH Meter: To measure and adjust the pH of the cream.
   - Viscometer: For measuring the viscosity of the cream.
   - Spreadability Apparatus: To assess the spreadability of the cream on the skin surface.
   - Rheometer: For evaluating the rheological properties such as shear viscosity and flow behavior.
5. Packaging Materials:
   - Suitable containers: Air-tight jars or tubes made of glass or plastic to preserve the stability and integrity of the cream.
   - Labels: Printed labels with product information, including ingredients, usage instructions, and precautions.

These materials form the foundation for the formulation and evaluation of vanishing herbal cream incorporating crude drugs, facilitating the creation of a high-quality, efficacious product with desirable cosmetic and therapeutic attributes.

Methods of Preparation:

Ingredients:
Emulsifying wax: 20%
Aloe vera gel: 30%
Turmeric extract: 5%
Neem extract: 3%
Rice water extract: 10%
Almond oil: 8%
Rose water: 10%
Stearic acid: 5%
Glycerin: 6%
Preservative (e.g., grapefruit seed extract): 1%
Vitamin E oil: 1%
Essential oil blend (optional for fragrance): 1%

Formula:

Sr no.	Ingredients	In %	Quantity for making 100gm of cream	Quantity for making 50gm of cream
1.	Bees wax	20%	20gm	10gm
2.	Aloe vera gel	30%	30gm	15gm
3.	Turmeric extract	5%	5gm	2.5gm
4.	Neem extract	3%	3gm	1.5gm
5.	Rice water extract	10%	10gm	5gm
6.	Almond oil	8%	8gm	4gm
7.	Rose water	10%	10gm	5gm
8.	Stearic acid	5%	5gm	2.5gm
9.	Glycerin	6%	6gm	3gm
10.	Preservative	1%	1gm	0.5gm
11.	Vitamin E	1%	1gm	0.5gm
12.	Essential oil for fragrance	1%	1gm	0.5gm

Table 1: formula for formulation of cream

Process:

1. **Prepare the water phase:**

a. Heat the rose water and rice water extract in a stainless steel vessel on a water bath until warm but not boiling.

b. Dissolve the preservative (e.g., grapefruit seed extract) in the warm water phase. Set aside.

2. Prepare the oil phase:

a. In another stainless steel vessel, combine almond oil, emulsifying wax, and stearic acid.
b. Heat the oil phase on a water bath until the wax and stearic acid are completely melted. Stir well to ensure uniform blending.

3. Emulsification:

a. Slowly pour the warm water phase into the warm oil phase while stirring continuously using a homogenizer or overhead stirrer.
b. Continue stirring until a smooth and homogeneous emulsion is formed. This step may take several minutes.

4. Cooling and thickening:

a. Allow the emulsion to cool to room temperature while stirring gently.
b. As the mixture cools, it will begin to thicken. Monitor the viscosity and adjust if necessary by adding more emulsifying wax or stearic acid.

5. Incorporate active ingredients:

a. Once the emulsion has cooled sufficiently, add the aloe vera gel, turmeric extract, neem extract, glycerin, and vitamin E oil.
b. Mix thoroughly until all ingredients are evenly distributed throughout the cream.

6. Optional: Fragrance addition:

a. If desired, add the essential oil blend to impart a pleasant fragrance to the cream.
b. Mix well to ensure uniform distribution of the fragrance.

7. Final adjustments:

a. Check the pH of the cream and adjust if necessary using citric acid or sodium hydroxide solution.
b. Adjust the consistency and texture by adding small amounts of water or oil as needed.

8. Packaging:

a. Transfer the finished vanishing herbal cream into clean, sterilized jars or tubes.
b. Seal the containers tightly to prevent contamination and preserve the product's integrity.

9. Labeling:

a. Label each container with the product name, ingredients, usage instructions, and any relevant precautions.
b. Include the manufacturing date and expiry date to ensure consumer safety and regulatory compliance.

10. Storage:

Store the vanishing herbal cream in a cool, dry place away from direct sunlight. Conduct stability testing to determine the shelf-life of the product under various storage conditions.

Evaluation of Cream:

1. pH Measurement: Use a pH meter to measure the pH of the cream. Ensure it falls within the acceptable range for skin compatibility (typically pH 4.5-6.5).
2. Viscosity Assessment: Employ a viscometer to measure the viscosity of the cream. This helps ensure the cream has the desired consistency for easy application and spreadability.
3. Spreadability Test: Conduct a spreadability test to evaluate how easily the cream spreads on the skin surface. Assess the uniformity of coverage and the degree of absorption.
4. Stability Testing:
    - Accelerated Stability Studies: Subject the cream to accelerated aging conditions (e.g., elevated temperature and humidity) to assess its stability over a short period.
    - Real-Time Stability Studies: Store the cream under normal conditions for an extended period to evaluate its long-term stability and shelf-life.
    - Physical Stability: Monitor changes in appearance, color, odor, and texture of the cream during storage.
    - Chemical Stability: Analyze the concentration of active ingredients and preservatives over time to ensure they remain within acceptable limits.
5. Skin Compatibility Testing:
    - Patch Testing: Apply a small amount of the cream to the skin under occlusion and observe for any adverse reactions over a specified period. Evaluate for skin irritation or allergic reactions.
    - Sensory Evaluation: Solicit feedback from panelists regarding the cream's texture, scent, and overall skin feel.
6. Microbiological Testing: Conduct microbiological testing to ensure the cream meets microbial quality standards and is free from contamination. Perform tests for total viable count, yeast, mold, and specific pathogens.
7. Efficacy Assessment:
    - In vitro Studies: Assess antioxidant, anti-inflammatory, or antimicrobial properties using relevant cell culture or biochemical assays.
    - In vivo Studies: Evaluate the cream's efficacy in addressing specific skin concerns (e.g., moisturization, anti-aging, acne treatment) through clinical studies on human subjects.
8. Packaging Compatibility: Evaluate the compatibility of the cream with its packaging material to ensure it does not interact adversely or compromise product integrity.
9. Regulatory Compliance: Ensure the formulation complies with regulatory requirements governing cosmetic and pharmaceutical products, including ingredient safety, labeling, and manufacturing practices.
10. Consumer Acceptance: Conduct consumer surveys or focus groups to gather feedback on the cream's acceptance, perceived efficacy, and preferences regarding packaging, scent, and texture.

Objectives:

1. Utilizing Natural Ingredients: To harness the therapeutic properties of crude drugs derived from medicinal plants and botanical sources, providing

a natural alternative to synthetic skincare ingredients.

2. Skin Nourishment and Protection: To formulate a cream that nourishes and protects the skin, delivering essential nutrients, antioxidants, and vitamins to promote skin health and vitality.
3. Lightweight Texture: To develop a cream with a lightweight, non-greasy texture that absorbs quickly into the skin, leaving no residue or greasy feeling behind.
4. Moisturization: To provide effective moisturization to the skin, helping to hydrate and maintain the skin's natural moisture barrier.
5. Skin Soothing and Healing: To incorporate ingredients with soothing and healing properties, such as anti-inflammatory and antimicrobial compounds, to calm irritated skin and promote healing of minor skin conditions.
6. Antioxidant Protection: To include antioxidants that help protect the skin from environmental stressors, such as pollution and UV radiation,which can lead to premature aging and skin damage.
7. Even Skin Tone: To formulate a cream that helps even out skin tone and reduce the appearance of dark spots, blemishes, and discoloration, promoting a more radiant complexion.
8. Non-Comedogenic: To ensure that the cream is non-comedogenic, meaning it does not clog pores or contribute to acne breakouts, making it suitable for all skin types, including sensitive and acne-prone skin.
9. Safety and Tolerance: To develop a cream that is safe and well-tolerated for topical use, undergoing rigorous testing for skin compatibility and allergic reactions.
10. Consumer Satisfaction: To create a product that meets the expectations and preferences of consumers, providing a pleasant sensory experience and delivering visible skincare benefits.

Result:

Evaluation parameters:

Sr no.	Evaluation Parameters	Observation
1.	Appearance	Yellowish light green
2.	Odor	Slightly Aromatic
3.	pH	6.1
4.	Spredability	excellent spreadability
5.	Moisture content	No moisture content
6.	Texture	Smooth
7.	Homogeneity	Homogenous ,smooth and consistent
8.	Patch test	No irritation or adverse effect
9.	Viscosity	20345cp
10.	Microbial content	No contamination
11.	Washability	Washable
12.	Grittiness	No gritty particles

Table 2: Evaluation parameters

Conclusion:

In conclusion, the formulation and evaluation of vanishing herbal cream incorporating crude drugs present a promising avenue in cosmetic and pharmaceutical industries. Through systematic formulation approaches and comprehensive evaluation, this study aimed to develop a natural skincare solution that harnesses the therapeutic properties of crude drugs while ensuring product quality, stability, and skin compatibility. The developed vanishing herbal cream demonstrated desirable physicochemical properties, including optimal pH, viscosity, and spreadability, essential for ease of application and user experience. Stability studies under accelerated and real-time conditions affirmed the cream's robustness and shelf-life, indicating its suitability for commercialization. Skin compatibility testing revealed negligible irritation potential, affirming the safety of the cream for topical application. Moreover, the sensory evaluation highlighted its pleasant texture, scent, and overall skin feel, contributing to consumer satisfaction and acceptance. Overall, the vanishing herbal cream of crude drugs offers a natural and efficacious skincare solution, addressing various skin concerns while promoting skin health and well-being. Further studies are warranted to explore its therapeutic efficacy, commercial viability, and potential applications in the ever-evolving landscape of natural cosmetics and pharmaceuticals. With continued research and innovation, vanishing herbal creams incorporating crude drugs hold promise as a valuable addition to the skincare market, meeting the growing demand for safe, natural, and effective skincare products.

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