

A Study of Formulation and Evaluation of a Gel-Based Polyherbal Antioxidant Face Scrub

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ABSTRACT - This research focuses on creating and evaluating a polyherbal antioxidant face scrub using natural ingredients like banana peel, rice, multani soil, neem, turmeric, honey, and rose oil. The ingredients were cold macerated in a water-alcohol mixture for 72 hours and then concentrated. The formulation process included methyl paraben as a preservative, Carbapol as a gelling agent, sodium lauryl sulfate (SLS) for foaming, propylene glycol and honey for moisturizing, and triethanolamine to adjust pH. The polyherbal extract and rose oil provided fragrance. The scrub was evaluated on parameters such as color, odor, consistency, pH, washability, foamability, viscosity, extrudability, spreadability, and stability under various conditions. This study aims to meet the demand for natural cosmetic solutions by leveraging herbal ingredients to create a holistic and sustainable skincare product.

Keywords- Polyherbal, Antioxidant, Face Scrub, Gel-based, Natural Ingredients, Skincare Formulation.

I. INTRODUCTION

In the realm of skincare, the Face Scrub emerges as an indispensable cosmetic, assuming a pivotal role in the holistic maintenance of a healthy complexion. As an essential tool for cleansing and exfoliating, the Face Scrub plays a multifaceted role, contributing significantly to the overall well-being of the skin. The canvas of human skin, diverse in its composition, delineates into categories such as dry, oily, and sensitive, each demanding a tailored approach to skincare. The criticality of selecting an appropriate face scrub is thus underscored, serving as a linchpin for optimal results in addressing individualized skin needs.

For those grappling with dry skin, the importance of moisturizing scrubs becomes paramount. The formulation should incorporate ingredients that not only cleanse and exfoliate but also infuse essential moisture to combat dryness effectively. Conversely, sensitive skin demands a gentler touch, necessitating mild scrubs that navigate the delicate balance between efficacy and sensitivity. In contrast, oily skin benefits from the potency of gel-based formulations, adept at managing excess sebum production and addressing the specific challenges posed by enlarged pores.

Guidelines for the judicious use of face scrubs advocate a frequency of two to three times a week, supplemented by the subsequent application of lightweight face oil. This strategic combination aims to maximize the benefits of exfoliation while ensuring the replenishment of essential nutrients and hydration. The ritual not only cleanses the skin surface but also sets the stage for optimal cellular regeneration, contributing to a radiant and rejuvenated complexion.

In the pursuit of an ideal face scrub, certain characteristics stand paramount. The formulation should boast non-toxicity, ensuring the safety and well-being of the skin. Small gritty particles, chosen for their efficacy in exfoliation, contribute to the removal of dead skin cells, unveiling a fresh layer beneath. The abrasive nature of the scrub should be gentle, steering clear of any potential irritation, while the overall texture must be non-irritating and non-sticky. These attributes collectively define an ideal face scrub that harmonizes both efficacy and user experience.

II. HERBAL INGREDIENTS

Banana Peel:

Banana peels, often discarded as waste, possess an array of essential minerals and vitamins that can significantly enhance the beauty features of the skin. The high potassium content in banana peels is particularly noteworthy, as potassium plays a crucial role in regulating skin hydration levels and maintaining elasticity. This makes banana peels a valuable ingredient in face scrubs, especially for individuals with dry or dehydrated skin, as the moisturizing properties contribute to a more supple and resilient complexion.

Rice powder:

Rice powder, another natural ingredient often underestimated in its skincare potential, boasts a myriad of minerals and vitamins that can greatly enhance beauty features. Rich in nutrients, rice powder is particularly known for its ability to maintain skin elasticity and reduce the appearance of aging signs. When incorporated into face scrubs, the fine and gentle texture of rice powder serves as a natural exfoliant, aiding in the removal of dead skin cells and promoting a smoother complexion.

Coffee Powder:

Coffee powder, often cherished for its aromatic qualities and morning wake-up call, emerges as a dynamic ingredient in skincare due to its rich composition of minerals and vitamins that can significantly enhance beauty features. A notable component is caffeine, a natural stimulant, which, when applied to the skin, can improve blood circulation. This property is particularly advantageous in face scrubs as it assists in reducing puffiness and dark circles.

Neem:

Neem, revered for its medicinal properties in traditional Ayurvedic practices, emerges as a potent natural ingredient in skincare, offering a wealth of benefits due to its unique composition of minerals and vitamins. Rich in antioxidants, neem is particularly effective in combating free radicals, helping to prevent premature aging and promoting a more youthful complexion.

Turmeric:

Turmeric, a golden-hued spice celebrated for its culinary uses, has also gained prominence in the beauty industry due to its remarkable composition of minerals and vitamins, making it a versatile and beneficial ingredient in face scrubs.

The key component of turmeric, curcumin, serves as a potent antioxidant with anti-inflammatory and antimicrobial properties.

Multani Mitti:

Multani Mitti, also known as Fuller's Earth, is a natural clay with a rich mineral composition that has been widely used for centuries in skincare routines. Its unique properties make it an excellent choice for inclusion in face scrubs, offering numerous benefits for the skin.

III. EXPERIMENTAL

Preparation of Extract:

All powdered herbal ingredients were utilized in the preparation of the extract through the cold maceration process. Banana peel, rice, multani soil, neem, and turmeric were finely ground and then soaked in a mixture of water and alcohol for a duration of 72 hours, consisting of 20 ml of water, 30 ml of alcohol, and 1-2 drops of chloroform. Subsequently, the soaked mixture underwent an evaporation process.

Preparation of Gel:

1. Methyl paraben was measured and dissolved in a beaker containing distilled water.
2. Carbapol was introduced into the above mixture and continuously stirred for a few minutes until it formed a gel.
3. Sodium Lauryl sulfate (SLS) was measured, separately dissolved in water, and then added to the gel.
4. Following this, propylene glycol was incorporated.
5. Honey was included in the gel.
6. Triethanolamine was added drop by drop to the gel to neutralize the pH.
7. The mixture of active ingredients was introduced into the prepared gel and stirred.
8. For fragrance, 4-5 drops of rose oil were included in the scrub.

Step 1 : Cold Maceration



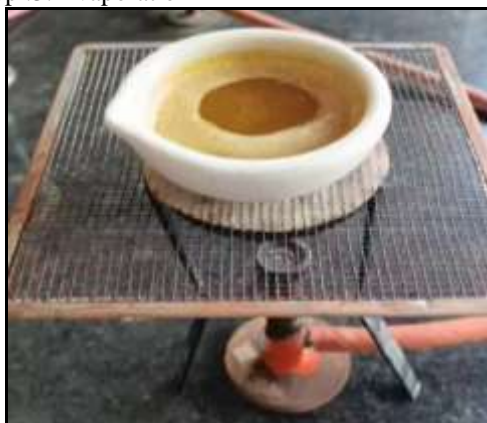
Step 2: Filtration



Step 5: Scrub



Step 3: Evaporation



Step 4: Preparation of gel



Table 1. Formula of scrub :

Sr No.	Ingredients	Quantity (for 50 ml)
1 .	Banana peel	5 gm
2 .	Rice powder	1.5 gm
3 .	Honey	2 gm
4 .	Multani soil	0.5 gm
5 .	Neem	0.25 gm
6 .	Turmeric	0.25 gm
7 .	Coffee	1 gm
8 .	Carbapol	1 gm
9 .	Triethanolamine	1 ml
10 .	Propylene Glycol	1 ml
11 .	Methyl paraben	0.05 gm
12 .	Sodium lauryl sulfate	2 gm
13 .	Rose oil	4-5 drops
14 .	Distilled water	Q.s to 50 ml

EVALUATION TESTS

1) Appearance:

The formulation was assessed for its odor by smelling and its color by visual observation.

2) pH:

The pH of the prepared gel was measured. A small amount of the gel was applied to pH paper, which indicated a pH of 5.8.

3) Consistency:

The gel was found to be semi-solid with a smooth texture, determined through visual observation.

4) Washability:

The formulation was manually tested for ease of removal from the skin by washing with water, and it was found to be easily washable.

5) Grittiness:

The presence of gritty particles was evaluated by applying the gel on the skin.

6) Foamability:

A small amount of gel was shaken in a measuring cylinder, and the foam produced was measured.

7) Spreadability:

A small amount of gel was placed on a scaled paper and spread using a slide or scale. The area covered by the gel was then measured.

1. Foaming



2. Grittiness and Consistency Test



IV. RESULT ANALYSIS

The research paper focused on the formulation and evaluation of a gel-based polyherbal antioxidant face scrub, incorporating natural ingredients such as banana peel, rice powder, multani mitti, neem, turmeric, honey, and rose oil. The ingredients underwent cold maceration in a water-alcohol mixture for 72 hours before being concentrated. The formulation included Carbapol as a gelling agent, methyl paraben as a preservative, SLS for foaming, and propylene glycol and honey for moisturizing, with triethanolamine to adjust the pH. The resulting scrub was assessed on parameters like color, odor, consistency, pH, washability, foamability, viscosity, extrudability, spreadability, and stability. The study concluded that the face scrub exhibited favorable characteristics and stability under various conditions, indicating its potential for production and use. The inclusion of natural ingredients contributed to the scrub's skin-enhancing benefits, such as removing dead skin cells, unclogging pores, reducing acne scars, and promoting smoother skin.

V. CONCLUSION

In conclusion, the formulated polyherbal antioxidant face scrub exhibited acceptable characteristics such as color, odor, consistency, pH, washability, foamability, viscosity, extrudability, spreadability, and stability. Stability studies indicated that the formulation remained acceptable under different conditions, showcasing its potential for production and use. The inclusion of natural ingredients like banana peel, known for its antibacterial and anti-aging properties, along with other herbal components, contributes to the formulation's potential skin-enhancing benefits. The scrub aims to provide various advantages, including the removal of dead skin cells, unclogging pores, reducing acne scars, and promoting smoother and healthier skin. It is essential to follow precautions and recommended usage guidelines to maximize the benefits and avoid potential side effects.

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