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Research Article

Development And Assessment Of A Poly-Herbal Facial Scrub

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ABSTRACT

This study aimed to develop a multi-herbal cream formulated within a gel matrix. Utilizing natural ingredients to address acne, wrinkles, and sebum production falls under the category of natural or herbal cosmetics. These herbal preparations typically include plant components with antimicrobial, antioxidant, and anti-aging benefits. Herbal cosmetics are considered safe for regular use with minimal side effects, and they impact the biological functions of the skin. This formulation incorporates fenugreek, coffee, coconut oil, rose water, turmeric, Aloe Vera gel, amla, honey, sodium lauryl sulfate, methylparaben, and glycerin. The primary objective of this research is to create a polyherbal facial scrub. Natural or herbal cosmetics are employed to combat acne, and wrinkles, and control sebum production. Plant-based products are intended to support skin health and address severe skin conditions. Traditional remedies are often used when conventional products prove ineffective or potentially harmful. A poly-herbal facial scrub offers enhanced efficacy and promotes healthier skin. The antioxidant, antiseptic, and anti-aging properties of fenugreek, turmeric, and amla contribute significantly to the effectiveness of the multi-herb facial scrub.

INTRODUCTION

The quest for effective and safe skincare solutions has led to an increasing interest in natural and herbal cosmetics. Among these, facial scrubs play a crucial role in maintaining healthy skin by exfoliating dead cells, unclogging pores, and enhancing skin texture¹. The development and assessment of a multi-herbal facial scrub represent a promising approach to harnessing the benefits of various plant-based ingredients in a single formulation. Traditional cosmetics often rely on

synthetic compounds that can sometimes lead to adverse effects, prompting a shift towards natural alternatives²⁻³. Herbal cosmetics, derived from plant sources, are valued for their therapeutic properties and minimal side effects. These products typically include active components such as antioxidants, antimicrobial agents, and anti-aging compounds, which contribute to their efficacy. A multi-herbal facial scrub, which integrates a blend of these beneficial herbs, aims

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to address multiple skin concerns, including acne, wrinkles, and excessive sebum production⁴. In recent years, there has been growing recognition of the potential of herbal ingredients such as fenugreek, turmeric, aloe vera, and amla in skincare. Fenugreek is known for its anti-inflammatory and antimicrobial properties⁵, making it effective in treating acne. Turmeric is renowned for its potent antioxidant and anti-aging⁶ effects, while aloe vera and amla provide soothing and rejuvenating benefits⁷. When combined, these ingredients can offer a synergistic effect, enhancing the overall efficacy of the facial scrub. The formulation of a multi-herbal facial scrub involves not only selecting the right blend of herbs but also integrating them into an effective delivery system⁸. Using a suitable carrier can offer a stable medium that maintains the integrity of active ingredients while providing a pleasant application experience⁹. This study focuses on the development and evaluation of a facial scrub that combines several herbal ingredients. The aim is to create a product that not only exfoliates but also offers additional skincare benefits through the properties of its herbal constituents. By assessing the physical, chemical, and efficacy aspects of the scrub, this research seeks to contribute valuable insights into the formulation and potential benefits of multi-herbal skincare products.

MATERIALS AND METHODS

Procurement of Raw materials:

All the plant materials such as fenugreek, coffee, coconut oil, rose water, turmeric aloe vera, amla, and honey were procured from the local market and authenticated through the Head, Department of Botany, RTMNU Nagpur University Nagpur.

Plant profile:

Fenugreek seeds

Fenugreek seeds come from the plant *Trigonella foenum-graecum*, a member of the Fabaceae family. Seeds contain saponins, alkaloids (e.g., trigonelline), flavonoids, and essential oils¹⁰.

Fenugreek seeds are traditionally used to aid digestion, manage blood sugar levels, and enhance lactation.

Coffee

Coffee is derived from the seeds of the *Coffea* plant, commonly *Coffea arabica* and *Coffea canephora* (robusta). Major constituents include caffeine, chlorogenic acids, lipids, and carbohydrates. Coffee is traditionally consumed for its stimulant effects, improving mental alertness and reducing fatigue¹¹.

Coconut Oil:

Coconut oil is extracted from the mature fruit of the *Cocos nucifera* palm. It contains predominantly saturated fats, including medium-chain triglycerides (MCTs) like lauric acid, capric acid, and caprylic acid. Coconut oil is used for moisturizing skin, conditioning hair, and as a base in various traditional and cosmetic preparations¹².

Rose Water

Rose water is derived from the distillation of rose petals, typically from *Rosa damascena*. It contains essential oils, phenolic compounds, and antioxidants such as citronellol and geraniol. Rose water is used for its soothing and anti-inflammatory properties in skincare and as a flavoring agent in culinary applications¹³.

Turmeric

Turmeric comes from the rhizomes of the *Curcuma longa* plant, a member of the Zingiberaceae family. Key constituents include curcumin, demethoxycurcumin, and bisdemethoxycurcumin, along with essential oils. Turmeric is used for its anti-inflammatory and antioxidant properties, supporting digestive health and treating skin conditions¹⁴.

Aloe vera

Aloe vera is obtained from the *Aloe barbadensis* miller plant leaves. It contains polysaccharides, glycoproteins, and various vitamins and minerals. Aloe vera is used for its soothing and moisturizing



properties in skincare, and internally for digestive health and laxative effects¹⁵.

Amla

Amla, or Indian gooseberry, comes from the fruit of the *Phyllanthus emblica* tree. It is rich in vitamin C, tannins, flavonoids, and polyphenols. Amla boosts immunity, supports digestive health, and promotes healthy skin and hair¹⁶.

Honey

Honey is produced by bees from the nectar of various flowering plants. It contains sugars (mainly fructose and glucose), enzymes, vitamins, minerals, and antioxidants. Honey is used for its antibacterial and soothing properties, treating sore throats, and wounds, and as a natural sweetener¹⁷.



Figure 1: Different Herbs Used For The Facial Scrub

Chemicals and additives:

Sodium Lauryl Sulphate (SLS):

In cosmetics, SLS acts as a surfactant and emulsifier, helping to create a lather and stabilize products by mixing ingredients with different solubilities for a smoother texture and easier application.

Methyl Paraben:

Methyl paraben is a common preservative in cosmetics, preventing microbial growth to extend product shelf life. It is also found naturally in some fruits and used as a preservative in food.

Glycerin:

Glycerin serves as a humectant and skin conditioning agent in cosmetics, attracting moisture to the skin and improving texture, while also functioning as a viscosity modifier and skin protectant.

Formulation of Facial Scrub:

To formulate a facial scrub using fenugreek, coffee, coconut oil, rose water, turmeric, aloe vera, amla, and honey, grind fenugreek seeds into a fine powder and mix it with freshly ground coffee for added exfoliation. In a bowl, blend the fenugreek coffee mix with a teaspoon of turmeric and a tablespoon of honey to form a paste. Add a few drops of coconut oil for moisturizing properties and mix well. Incorporate a tablespoon of aloe vera gel for its soothing effects and a splash of rose water to balance the consistency and enhance skin hydration. Finally, combine amla powder with the mixture rich in Vitamin C and antioxidants. Apply the scrub to damp skin in gentle circular motions, then rinse off with lukewarm water, and pat dry for refreshed, glowing skin.

Table 1: Formula For The Preparation Of Polyherbal Scrub

Sr. No	Ingredients	Quantity	Application
1	Fenugreek Seeds	5 g	Scrubbing agent
2	Coffee	5 g	Nourishing agent
3	Turmeric	0.05 g	Antiseptic
4	Aloe vera	1 ml	Antioxidant
5	Amla	1 g	antioxidant
6	Coconut oil	0.2 ml	Moisturizer
7	Honey	0.4 ml	Antiseptic
8	Glycerine	1 ml	Emollient
9	Methyl paraben	0.3 ml	Preservatives
10	Sodium lauryl sulphate	0.4 ml	Foaming agent
11	Rose water	Q. S.	Perfume

Evaluation of Formulation:

To evaluate the appearance of a facial scrub, follow these steps:

1. Appearance:

Visual Inspection: Observe the scrub under natural light or white artificial light. Note the primary color and any variations or specks. Document the color description (e.g., yellowish-brown, beige) and compare it to a standard or reference color if available.

Smell Test:

Gently open the container and take a cautious sniff. Identify and describe the scent (e.g., sweet, herbal, chemical). Ensure the odor is characteristic and pleasant, as it can influence user experience.

Consistency Check: Assess the physical state of the scrub (e.g., semisolid, gel-like). Determine if it holds its form or easily deforms when handled.

Texture Examination: Use a spatula or clean finger to scoop a small amount of the scrub. Check how smoothly it spreads and if it maintains a uniform texture without lumps or separation.

Visual Uniformity:

Look for consistency in the appearance throughout the product. Ensure there are no visible particles settling at the bottom or floating inconsistently.

2. pH:

pH of the prepared scrub was evaluated using pH paper. A small amount of scrub was applied to the

pH paper. The pH was found to be in the range of 4-6.

3. Spreadability:

Used to determine the spreadability of the gel on the skin. A small quantity of the sample was placed on a glass slide, with another slide placed above it. Weight was applied to the top slide, and the spread was measured¹⁸.

It is calculated by using the formula:

$$S = m \times L/t$$

S= spreadability

M= weight placed on a slide

L= length of glass slide

T= time taken in seconds

4. Irritability:

A small amount of gel was applied to the skin and left for a few minutes. It was found to be non-irritable.

5. Washability:

A small quantity of gel was applied to the skin and washed off with water after a few minutes. It was found to be washable with water.

6. Grittiness:

Exfoliants require abrasive properties; fenugreek seeds were powdered and sieved. A few gritty particles were observed in the preparation.

7. Foaming Index:

1 gm of formulation was added to 5 ml of water in a test tube and shaken for 5 minutes. After allowing it to stand for 15 minutes, foam height



was observed¹⁹. If the foam height was less than 1 cm, the foaming index was less than 100. If more than 1 cm, it was over 1000.

$$\text{Foaming index} = 1000/a$$

Where

a = in ml in the test tube showing 1cm height

RESULTS AND DISCUSSION

The facial scrub exhibited a yellowish-brown color, which was visually appealing and indicative of its natural ingredients. The odour resembled maple syrup, with a sweet and pleasant aroma. The pH level, ranging between 4 and 6, was within a suitable range for skin care, suggesting

compatibility with the skin's natural acidity. The scrub was non-irritant, providing a gentle experience upon application. It felt slightly greasy, which is characteristic of the inclusion of coconut oil. Despite this, it was stable and maintained its semisolid consistency throughout storage. The scrub demonstrated uniform spreadability, ensuring an even application on the skin. It was easily washable, which facilitated convenient use and cleanup. Visually and by touch, the scrub was smooth and consistent, with no noticeable gritty particles. It was also easily removable, contributing to an overall user-friendly experience.

Table 2: Evaluation parameters of Facial Scrub

Sr. No.	Parameter	Results
1.	Colour	Yellowish brown
2.	Oduor	Maple syrup like, sweet
3.	PH	4-6
4.	Irritability	Non irritant
5.	Feel on application	Greasy
6.	Stability	Stable
7.	Consistency	Semisolid
8.	Spreadability	Uniform
9.	Washability	Easily washable
10.	Homogeneity by visual by touch	Smooth Consistent
11.	Removal	Easily Removable

CONCLUSION

The formulated facial scrub, featuring a yellowish-brown color and a sweet, maple syrup-like odour, demonstrated its natural ingredient base, making it both visually appealing and pleasant to use. Its pH level, ranging from 4 to 6, confirmed its compatibility with the skin's natural acidity, ensuring a gentle application. Despite a slight greasiness from coconut oil, the scrub maintained a stable semisolid consistency, demonstrating excellent stability over time. The scrub's uniform spreadability and smooth texture facilitated even application, while its easy washability and non-irritating properties contributed to a positive user experience. Compared to conventional cosmetics, this natural and herbal scrub offers safety and

efficacy suitable for all skin types. The inclusion of fenugreek, turmeric, and amla provided additional antioxidant, antiseptic, and anti-aging benefits, enhancing its overall effectiveness. The product passed all evaluation parameters, affirming its practicality and effectiveness as a user-friendly, health-promoting cosmetic.

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