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FORMULATION AND EVALUATION OF HERBAL FACE SCRUB: A REVIEW

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ABSTRACT

The modern cosmetic industry is witnessing a surge in demand for herbal-based skincare products due to their minimal side effects, biodegradability, and therapeutic benefits. Among these, facial scrubs play a pivotal role in exfoliating dead skin cells and enhancing facial radiance. The present research is aimed at the formulation and evaluation of an herbal face scrub incorporating natural ingredients such as coffee powder, aloe vera gel, orange peel powder, and honey, along with methyl paraben as a preservative.

Coffee is rich in antioxidants and known for its anti-inflammatory and exfoliating properties. Aloe vera soothes and hydrates the skin, while orange peel powder is loaded with Vitamin C, contributing to skin brightening and acne reduction. Honey, with its antimicrobial and moisturizing attributes, complements the formulation by enhancing the texture and nourishment of the skin.

The scrub was formulated using an appropriate proportion of the active herbal ingredients and subjected to various evaluation parameters, including organoleptic properties, pH, spreadability, stability, particle size, wash ability, grittiness, and skin irritation test. The results indicated that the formulation was stable, non-irritant, and cosmetically acceptable, providing a mild exfoliating effect suitable for routine skincare.

This study emphasizes the potential of using commonly available herbal components to develop an effective, affordable, and natural skincare product with added antioxidant and therapeutic benefits. It promotes sustainability and aligns with consumer preferences for herbal and organic formulations in personal care products.

KEYWORDS: *Herbal Face Scrub, Coffee, Aloe Vera, Orange Peel Powder, Honey, Natural Cosmetics, Exfoliation, Skin Care, Methyl Paraben, Antioxidants.*

INTRODUCTION

The global cosmetic industry is rapidly evolving with a growing consumer inclination toward herbal and organic products. Herbal cosmetics, also referred to as phyto-cosmetics, are formulated using plant-derived ingredients and are considered safer, more sustainable, and environmentally friendly compared to synthetic formulations. These products not only fulfill aesthetic demands but also offer medicinal benefits due to the bioactive compounds present in herbs1-2.

The increasing awareness of the side effects associated with chemical-based cosmetics such as irritation, allergies, and long-term toxicity has led to a resurgence in the popularity of herbal alternatives. Natural ingredients are perceived as milder on the skin and are particularly effective in long-term skincare regimes3-4.

Facial scrubs are an essential part of skincare routines. They help in removing dead skin cells, unclogging pores, and improving skin texture, tone, and clarity. The exfoliation process promotes blood circulation and accelerates cell turnover, leading to healthier and more youthful-looking skin5-6.

Commercially available face scrubs often contain synthetic microbeads and preservatives, which can cause environmental and dermatological concerns. The demand for eco-friendly, biodegradable scrubbing agents has thus fueled the interest in herbal face scrubs using natural exfoliates such as fruit peels, plant powders, and botanical extracts7-8.

Significance of Herbal Ingredients in the Study9-20:
Coffee Powder:
Coffee contains caffeine and polyphenols which act as natural exfoliates and antioxidants. They help reduce puffiness, minimize pores, and stimulate blood flow. Ground coffee is slightly abrasive, making it ideal for gentle exfoliation.

➢ Biological Source:

Coffea arabica or Coffea robusta (Family: Rubiaceae) – The powder is obtained from roasted and ground seeds (coffee beans).

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- Role in Facial Scrub:
- Acts as a natural exfoliate to remove dead skin cells.
- Rich in antioxidants like chlorogenic acid, which protect against skin damage.
- Improves blood circulation when massaged into the skin.



Fig.1: Coffee Powder

Aloe Vera

Aloe vera is widely used in cosmetics due to its soothing, moisturizing, anti-inflammatory, and wound-healing properties. It hydrates the skin without making it greasy, making it suitable for all skin types.

- **Biological Source**

Aloe barbadensis Mill. (Family: Liliaceae) – The gel is extracted from the inner leaf pulp.

- Role in Facial Scrub:
- Provides moisturization and hydration to the skin.
- Exhibits anti-inflammatory, cooling, and soothing effects.
- Helps in healing minor cuts, burns, and acne scars.
- Balances skin pH and improves skin elasticity.

Taxonomical Classification

Rank	Classification
Kingdom	Plantae
Subkingdom	Tracheobionta
Division	Magnoliophyta
Class	Liliopsida
Order	Asparagales
Family	Asphodelaceae
Genus	*Aloe*
Species	*Aloe barbadensis* Miller

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Fig.2. Aloe Vera

Orange Peel Powder

Orange peel is rich in Vitamin C and citric acid. It helps in lightening dark spots, reducing acne, and providing a natural glow to the skin. Its fine particles aid in mild exfoliation without harming the skin barrier.

• **Biological Source**

Citrus sinensis (Family: Rutaceae) – The powder is made from dried peels of sweet orange fruits.

- **Role in Facial Scrub**:
- Contains Vitamin C and natural AHAs (alpha-Hydroxy acids) which brighten and rejuvenate skin.
- Helps in removing blackheads, tightening pores, and controlling excess oil.
- Works as a gentle exfoliate and natural toner.
- Reduces acne and pigmentation.

Taxonomical Classification

Rank	Classification
Kingdom	Plantae
Subkingdom	Tracheobionta
Division	Magnoliophyta
Class	Magnoliopsida
Order	Sapindales
Family	Rutaceae
Genus	*Citrus*
Species	*Citrus sinensis*



Fig. 3 Orange Peel Powder

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Honey is a natural humectant and antimicrobial agent. It locks in moisture and protects the skin from bacterial infections. Honey also acts as a natural cleanser and softens the skin.

➢ **Biological Source**

Produced by Apis mellifera (honey bee) from floral nectar.

➢ Role in Facial Scrub:

➢ Acts as a natural humectant, locking in moisture.

➢ Possesses antimicrobial and antioxidant properties.

➢ Softens and nourishes the skin.

➢ Promotes a smooth texture and helps prevent acne.



Advantages of Herbal Face Scrub21-23:

➢Natural Exfoliation: Plant-based particles gently remove dead skin cells.

➢Hydration and Nourishment: Herbal ingredients like honey and aloe vera maintain the skin's moisture balance.

➢Antioxidant and Anti-inflammatory Properties: Protect skin from environmental damage and reduce signs of aging.

➢Fewer Side Effects: Herbal scrubs are generally free from harsh chemicals that can cause skin sensitivity.

➢Eco-friendly: Biodegradable ingredients make these formulations safer for the environment.

Market Demand and Trends in Herbal Skincare24-25:

The global herbal skincare market is expected to grow significantly due to consumer demand for chemical-free and eco-friendly products. Millennials and Gen Z consumers are increasingly inclined toward DIY skincare and plant-based beauty products. The use of familiar kitchen ingredients such as coffee and orange peels adds trust and cultural relevance to such formulations.

The trend toward minimalism in skincare, often termed "skinimalism," has further boosted the market for multipurpose herbal products. Products like herbal face scrubs that combine cleansing, exfoliating, and moisturizing actions are gaining widespread acceptance.

Traditional Systems of medicine:

Traditional systems of medicine have been an integral part of healthcare in many cultures for thousands of years. Among the most well-known and widely practiced traditional medical systems in South Asia are Ayurveda, Siddha, and Unani. These systems emphasize holistic health, natural remedies, and the balance between body, mind, and environment, providing a rich foundation for herbal formulations used in skincare and other therapeutic applications.

Ayurveda, meaning "the science of life," is one of the oldest holistic healing systems, originating over 5000 years ago in India. It focuses on balancing the three fundamental bio-energies or Doshas—Vata (air and space), Pitta (fire and water), and Kapha (earth and water)—which govern physical and mental processes. Ayurveda utilizes natural herbs, minerals, diet, and lifestyle modifications to maintain health and treat diseases. Herbal preparations in Ayurveda are designed to restore doshic balance and promote skin health through cleansing, nourishment, and protection, often using ingredients such as aloe vera, turmeric, neem, and honey.

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Siddha medicine is another ancient traditional system, predominantly practiced in Tamil Nadu, India. It shares similarities with Ayurveda but has distinct theories based on five elements—earth, water, fire, air, and ether—and the concept of three humors (Vali, Azhal, and Iyam). Siddha emphasizes the use of herbal, mineral, and animal products for healing. It incorporates various herbal pastes, oils, and powders to rejuvenate the skin, treat ailments, and enhance beauty. The Siddha system highlights personalized treatment approaches based on individual constitution and environmental factors.

Unani medicine, rooted in the Greco-Arabic tradition and widely practiced in South Asia, especially in India and Pakistan, is based on the principles of Hippocrates and Galen. It revolves around the concept of four humors—blood (Dam), phlegm (Balgham), yellow bile (Safra), and black bile (Sauda)—which must be in balance for good health. Unani treatments employ herbal remedies, dietary guidelines, and regimens to restore humoral balance. It uses natural ingredients like rose water, sandalwood, and orange peel in topical preparations to cleanse, soothe, and revitalize the skin.

Sr. No	Activity	Plan of Work Detailed Description
1	Literature review of herbal ingredients	A comprehensive literature survey will be conducted to gather scientific data on the selected herbal ingredients (Aloe vera, Coffee powder, Orange peel, and Honey). Focus areas will include their skin benefits, phytoconstituents, traditional uses, pharmacological actions, and previous cosmetic applications. Reputable sources such as PubMed, Scopus, Google Scholar, and Ayurvedic texts will be referred.
2	Procurement of raw materials	Raw herbal ingredients (dried orange peel, Aloe vera gel, coffee powder, and pure honey) will be collected from reliable sources such as herbal farms, local markets, or certified suppliers. Analytical-grade excipients (if used) will also be procured. Quality certificates or authentication data (if available) will be obtained.
3	Standardization of raw materials	Each herbal ingredient will be subjected to standardization procedures such as organoleptic evaluation, moisture content, ash value, extractive value, and preliminary phytochemical screening. These tests ensure purity, identity, and consistency of the materials.
4	Formulation of face scrub	The face scrub will be formulated using appropriate proportions of the selected herbal ingredients. Formulation trials will be done to achieve a desirable texture, consistency, and exfoliating action. Different batches may be prepared to optimize formulation parameters.
5	Evaluation of the formulation	The final optimized formulation will be evaluated for various parameters like: appearance, color, odor, pH, spreadability, grittiness, stability, microbial load, and skin irritation test (if applicable). The scrub's exfoliating and cleansing performance will also be assessed through user trials or laboratory analysis.
6	Report writing and conclusion	Based on the formulation and evaluation results, a detailed report will be prepared. It will include methodology, observations, results, discussions, and conclusions. Suggestions for future improvements and applications in cosmetic industries will be mentioned. Documentation will follow standard research report guidelines.

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