



FORMULATION AND EVALUATION OF A HERBAL FACIAL SCRUB BY USING CUCUMBER AND SAFFRON

**Vidyasagar S. Vyawahare*, Manojkumar M. Nitalikar, Shrinivas.K.Mohite, Tejas.R.Kheradkar,
Indrayani S. Bandgar**

Dept. of Pharmaceutics, Rajarambapu College of Pharmacy, Kasegaon (MS)

Correspondence Address:

Manojkumar.M.Nitalikar,

Assistant Professor,

Rajarambapu College of Pharmacy, Kasegaon (MS) India

Email id: mmnitalikar@gmail.com

Abstract

To maintain healthy and vibrant skin, regular cleansing is essential to rid the surface of grime, oils, dead cells, makeup residues, and other impurities. In our current study, we've developed an herbal facial scrub comprising eighteen different herbal powders, including turmeric, neem, saffron, sandalwood, arjuna, pumpkin, cucumber, almond oil, sesame oil, among others. The efficacy of the scrub was assessed based on various parameters such as appearance, smoothness, its impact on acne, whiteheads, blackheads, and black spots, as well as spreadability, astringent and emollient actions, and irritation. The results indicate excellent outcomes for oily skin types and satisfactory effects for normal and dry skin. Importantly, all ingredients used in this herbal facial scrub are sourced from food-grade materials, minimizing the likelihood of adverse reactions. Our ongoing efforts focus on reformulating the scrub into a cream base to enhance spreadability and provide additional emollient and smoothing benefits.

1. Introduction

Cosmetics encompass products designed to augment or alter facial appearance, fragrance, or body texture. Among these, facial scrubs play a crucial role in skincare regimens. Typically cream-based, facial scrubs contain small exfoliating particles that, when massaged onto the skin, effectively remove dry, dead cells, thereby promoting smoother skin texture. Moreover, facial scrubs extend their benefits beyond the face, aiding in keeping the skin on the neck supple and facilitating exfoliation. During exfoliation, it's advisable to tilt the head upwards to ensure the skin on the neck is taut, facilitating smoother application. Facial scrubbing offers deep cleansing and exfoliation suitable for all skin types, with particular effectiveness for oily skin. This universally suitable facial scrub effectively eliminates impurities, dirt, contaminants, and excess oil. Its

adaptable formulation serves both as a facial scrub and a facial mask. Simply blend it with water or a herbal infusion, apply it to the face, and gently rinse off. Experience softer, cleaner, and revitalized skin after each use.

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Incorporating a facial scrub into your skincare routine can leave your skin feeling beautifully radiant, youthful, and incredibly soft. Unlike standard soap or cleansers, facial scrubs utilize small particles, beads, or gentle chemicals to eliminate old skin cells, paving the way for new ones in a process known as exfoliation. Using a facial scrub is simple: select a neutral or chemical scrub suitable for your skin type, massage it onto damp skin for one minute, and then rinse thoroughly. Repeat this process once or twice a week to maintain optimal results. With its myriad benefits, incorporating a facial scrub into your weekly skincare regimen is a wise choice.¹

Exfoliation entails the removal of the skin's oldest dead cells from its outermost surface. This process is integral to various facial treatments, including microdermabrasion and chemical peels. Exfoliation can be accomplished through mechanical or chemical methods.²

Keywords: neem, antioxidants properties, exfoliants, saffron

1.1. Exfoliants:

Exfoliants are ingredients or substances that help to remove dead skin cells from the surface of the skin. There are two types of exfoliants: physical exfoliants and chemical exfoliants.

1. Physical Exfoliants: Physical exfoliants operate by manually scrubbing away dead skin cells with abrasive particles or tools. Examples of common physical exfoliants are:

Sugar or salt scrubs

Ground coffee or rice

Facial brushes or sponges

Micro beads (although these are now banned in many countries due to environmental concerns)

2. Chemical Exfoliants: Chemical exfoliants work by breaking down the bonds between dead skin cells, allowing them to be easily removed from the skin. Some common chemical exfoliants include:

Alpha-hydroxy acids (AHAs) such as glycolic acid and lactic acid

Beta-hydroxy acids (BHAs) such as salicylic acid

Enzymes such as papain (found in papaya) and bromelain (found in pineapple)

Both physical and chemical exfoliants are capable of effectively removing dead skin cells and encouraging cell renewal. However, it's crucial to use exfoliants appropriately and in moderation to prevent over-exfoliation, which can lead to skin irritation and damage. Additionally, selecting an exfoliant that matches your skin type and concerns is essential, as some exfoliants may be too harsh for sensitive skin or could worsen certain skin conditions like acne.^{3, 4}

1.2. Properties of exfoliants:

Exfoliants are formulated to eliminate dead skin cells and impurities from the skin, resulting in a smoother and more radiant complexion. While the ideal characteristics of exfoliants vary based on their type and the targeted skin type, the following are typically key properties to consider:

1. Effective: An ideal exfoliant should effectively remove dead skin cells and impurities without being excessively harsh or abrasive. It should deliver noticeable results without causing any harm to the skin.⁵

2. Gentle: Although exfoliation is crucial for maintaining healthy skin, it should not be overly aggressive, as this can lead to irritation, inflammation, and potential damage. Hence, an ideal exfoliant should be gentle enough to prevent any harm.

3. Safe: An ideal exfoliant should prioritize safety, devoid of any harmful ingredients. It should be free from synthetic fragrances, preservatives, and other potentially hazardous chemicals.

4. Hydrating: Exfoliation can occasionally leave the skin feeling dry and dehydrated. Therefore, an ideal exfoliant should be hydrating and moisturizing to counteract any dryness, ensuring the skin feels soft and supple after use.^{6, 7}

5. Non-comedogenic: An ideal exfoliant should be non-comedogenic, meaning it should not clog pores or cause acne breakouts. It should be suitable for all skin types, including sensitive and acne-prone skin.

6. Natural: An ideal exfoliant should be crafted from natural, organic, or sustainable ingredients to minimize environmental impact and deliver the best possible benefits for the skin.

7. Customizable: An ideal exfoliant should be customizable to accommodate individual skin types and concerns. It should come in various formulations, strengths, and textures, allowing for a personalized experience and optimal results.⁸

1.3. Advantages

1. Gentle and Nourishing: Herbal scrubs are crafted from natural and organic ingredients, ensuring they are gentle on the skin. They are free from harsh chemicals and synthetic fragrances, which can potentially harm the skin.

2. Effective Exfoliation: Herbal scrubs contain natural exfoliants like sugar or salt, which gently remove dead skin cells, unclog pores, and promote cell renewal. This process leaves the skin looking brighter and smoother.

3. Moisturizing: Herbal scrubs contain natural oils and humectants that hydrate and nourish the skin, leaving it feeling soft, supple, and moisturized.

4. Suitable for All Skin Types: Herbal scrubs are generally safe and suitable for all skin types, including sensitive skin, as they are free from harsh chemicals that can cause irritation.^{9, 10}

5. Environmentally Friendly: Herbal scrubs are made from natural and biodegradable ingredients, making them a more environmentally friendly option compared to synthetic scrubs.

1.4. Disadvantages

1. Can be Expensive: Herbal scrubs made with high-quality, natural ingredients can be more expensive than synthetic scrubs, potentially making them less accessible to some people.

2. May not be as effective as Synthetic Scrubs: While herbal scrubs can effectively exfoliate the skin and promote cell renewal, they may not be as potent as synthetic scrubs that contain stronger exfoliants.

3. May Cause Irritation: Although herbal scrubs are generally safe for most skin types, some individuals may experience irritation or allergic reactions to certain ingredients. It is important to perform a patch test before use to ensure the product is suitable for your skin.^{11, 12}

4. Short Shelf Life: Herbal scrubs made with natural ingredients may have a shorter shelf life compared to synthetic scrubs, which often contain preservatives to extend their longevity. As a result, herbal scrubs may need to be used more quickly to avoid spoilage.

1.5. Objectives

The primary goal of an herbal face scrub is to exfoliate and eliminate dead skin cells from the face, resulting in a smooth and revitalized complexion. These scrubs are crafted from natural ingredients like herbs and fruits, each possessing gentle exfoliating properties. Their purpose is to delicately eliminate impurities, clear pores, and enhance blood circulation to the face, thereby fostering a vibrant and healthy appearance. Additionally, herbal face scrubs offer hydration and nourishment to the skin, aiding in enhancing its texture and tone. Ultimately, the objective of an herbal face scrub is to enhance both the look and well-being of the skin by eliminating dead skin cells and supplying vital nutrients.

1.6. Precautions to be taken while applying an exfoliant

1. Apply the product with a gentle, rotating motion to the face and neck for approximately 30 seconds. Afterwards, thoroughly rinse off with water.¹¹
2. Apply twice a week
3. Avoid exfoliating the skin if there are any open wounds, cuts, or sunburns present.¹³
4. Excessive exfoliation and rubbing can harm the skin.
5. The choice of exfoliant depends on the individual's skin type.¹³

2. MATERIALS AND METHODS

All ingredients were sourced in their raw form from a local distributor of karad. Each ingredient was meticulously powdered and sieved through sieve no. 120. The powdered ingredients were then carefully stored in moisture-resistant, tightly sealed containers.

Table no. 1 lists the various ingredients and their primary uses.

Table No. 1. Formulation of Herbal facial scrub

Sr. No.	Name of Ingredients	Quantity in percentage	Use
1	Cucumber	0.5 %	It removes dead skin
2	Turmeric	1.0%	Antiseptic and improves Fairness
3	Tulsi	0.5%	Removes heat, Acne, antimicrobial
4	Multani Mitti	1.0%	Cleaning of oil and dust particles
5	Ginger	0.5%	Promote circulation
6	Coriander	0.5%	Cooling effects
7	saffron	1.0%	Fight acene, brightness skin
8	Red sandalwood	1.0%	Post acne and other facial scars
9	Pea seeds	0.5%	Prevention of acne
10	Pumpkin	0.5%	Juvenile acne and acne vulgarize, pimples, blackheads, antiseborrhoea agent.
11	Citric acid	0.5%	Preservative
12	Rose Water	q.s.	As a Perfumer
13	Aloe Vera	0.5%	Remove impurities and hydrate the skin
14	Amla	0.5%	Antioxidant and Vitamin C
15	Lavender	1.0%	Astringent and smooth skin
16	Onion	0.5%	Acne, blackheads, for blemished skin.
17	Arjuna	0.5%	Skin disease, astringent
18	Neem	0.5%	Many skin conditions, antiseptic
19	Honey	1.0%	Emollient, antiseptic and astringent, nutritive
20	Almond oil	1.0%	Nutritive and emollient
21	Sesame oil	1.0%	Skin tonic and emollient

2.1. Preparation of scrub

The specified quantities of each ingredient were measured out. Turmeric, saffron, ginger, coriander, fenugreek, pea seeds, pumpkin, onion, and Tulsi were combined and thoroughly mixed in one mortar. In a separate mortar,

Cucumber, arjuna, neem, amla, and aloe Vera were mixed properly. The two powders were then combined and mixed well. Gradually, the remaining ingredients were added with thorough mixing. Sesame oil and almond oil were added drop by drop, ensuring no lumps formed. Also we added rose water as a perfumer and added citric acid as preservative. Finally, glycerin was added drop by drop and mixed thoroughly in the mortar. The final product was packed into well-sealed plastic bags, each containing 20 grams.^{14, 15}

The formulation prepared was used as the following way:

As Cleanser

Mix the formulated powder with the specified quantity of water in a clean bowl until a smooth paste forms. Gently swirl the paste over and massage onto damp skin with your fingertips, then rinse off with warm water.

As Mini Mask:

Apply a thin layer to your face, avoiding the eye area, and leave it on for 2-3 minutes. Rinse thoroughly and pat dry.

3. Evaluation of Herbal Facial Scrub

Eight volunteers were chosen from each age bracket of 16-22. They were then divided into four groups according to their skin type.

Group 1:- Consisting of individuals with normal skin, this group acted as the control. They were given the widely used EverYuth facial scrub, promoted by Zydus Cadila.

Group 2:- Consisting of individuals with normal skin, this group received a specially prepared facial scrub.

Group 3:- This group consisted of individuals with dry skin who were given the specially prepared facial scrub.

Group 4:- This group comprised individuals with oily and acne-prone skin, and they were given the specially prepared facial scrub.

All volunteers were instructed to use the scrub three times a week. They were advised to first make a paste and then gently apply it to their faces using upward circular motions. After leaving it on for two minutes, they were instructed to rinse their faces with cold water.

4. RESULTS AND DISCUSSION

The herbal facial scrub prepared in the laboratory was found to be comparable to the popularly marketed scrub in terms of several parameters. It exhibited excellent efficacy in controlling oil secretion and preventing the formation of new pimples. This effect could be attributed to the inclusion of multani and Arjuna in the formulation.

The powder formulation had a brown color and emitted a khus fragrance. It was lightweight, non-irritating to the skin, and quite elegant. The powder felt smooth to the touch, and when mixed into a paste, it spread easily and sufficiently.

The scrub exerted strong abrasive action, attributed to the inclusion of wheat cover and corn meal, effectively removing dead cells and skin debris, resulting in a fresher appearance and a soft, smooth texture. It also demonstrated satisfactory effects on blackheads and whiteheads, possibly due to the presence of onion and pumpkin. Enhanced complexion improvement was noted, thanks to the inclusion of Turmeric in the scrub, which reduces melanin synthesis.

Subjects with oily skin reported reduced levels of facial oil secretion, possibly attributed to the astringent properties of arjuna (Tannins), multani, and honey incorporated into the scrub. Individuals with dry skin observed decreased dryness with regular scrub use, likely due to the inclusion of honey and almond oil in the mixture. The improvement in black spots on normal skin may be credited to red sandalwood. Consequently, it can be inferred that our prepared scrub serves as a suitable and advantageous alternative to more expensive marketed scrubs.

The results are shown in table no-2

Table no.2 Subject Evaluation

Particulars	Control group	Normal skin		Dry skin		Oily skin	
Appearance	+++	+++	++-	++-	++-	++-	+++
Smoothness	+++	++-	-+-	--+	++-	++-	++-
Complexation	+++	++-	-+-	-+-	++-	++-	++-
Effect on acne	---	-+-	--+	--+	-++	--+	+++
Effect on white and black heads	+++	+++	-++	---	-++	+++	+++
Effect on black spot	---	+++	+++	--+	++-	---	---
Spreadability	+++	+-+-	-+-	+-	---	+++	+++
Astringent action	--+	+++	+-	++-	+-	-++	+++
Emollient action	+++	+++	-++	++-	++-	+++	+++
Irritation	---	---	---	+-	---	---	-++

Excellent: +++++, Better: +++, Good: ++, Satisfactory: +.

5. CONCLUSION

Since all the ingredients used in this herbal facial scrub are food ingredients, the likelihood of side effects is minimal. This scrub can be effectively utilized for achieving optimal results, particularly for oily skin, and is suitable for use on dry and normal skin types as well. Efforts are underway to reformulate the scrub into a cream base to enhance spreadability and provide the emollient and smoothing properties of a cream.

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