



# FORMULATION AND EVALUATION OF POLYHERBAL FACIAL SCRUB

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## Abstract

The primary goal of this study was to create a polyherbal scrub that could be mixed with gel. Cosmetics are essential in today's world for both men and women to look younger and change the way their skin looks. Using natural substances means that the skin's surface needs to be cleansed often to get rid of dead cells, oil, sebum, and other secretions, as well as makeup that has been applied and crusts. Antimicrobial, antioxidant, and anti-aging plant parts are typically found in herbal cosmeceuticals. It is the most side-effect-free and safest product to use regularly. The product that affects how the skin functions biologically is called cosmeceuticals. The main objective of the current investigation was to create a polyherbal scrub. Using cosmetics is the safest option.

## Keyword

Polyherbal Skin, Glow, Acne, Moisturizing, Facial Scrub, Spreadability, Emollient action.

## Introduction

**Define of Cosmetics:** The medicines and Cosmetics Act defines cosmetics as essays meant to be rubbed, poured, sprinkled, scattered, introduced into, or applied in any other way to the mortal body or any part thereof for the purposes of cleaning, beautifying, enhancing attractiveness, or altering appearance. The colouring is pure from the medicine license exercise.

**Definition of herbal cosmetics:** Herbal cosmetics are defined as makeup made with plant-based ingredients that have cosmetic effects. Because of their gentle action and harmless nature, botanicals have been used in beauty care products more and more recently. Both natural and phyto-ingredients are used in cosmetics. Natural goods consist of things like oils, extracts, and secretions. Pure components derived from alternative processes are referred to as phyto-ingredients.

## **Types of cosmetics:**

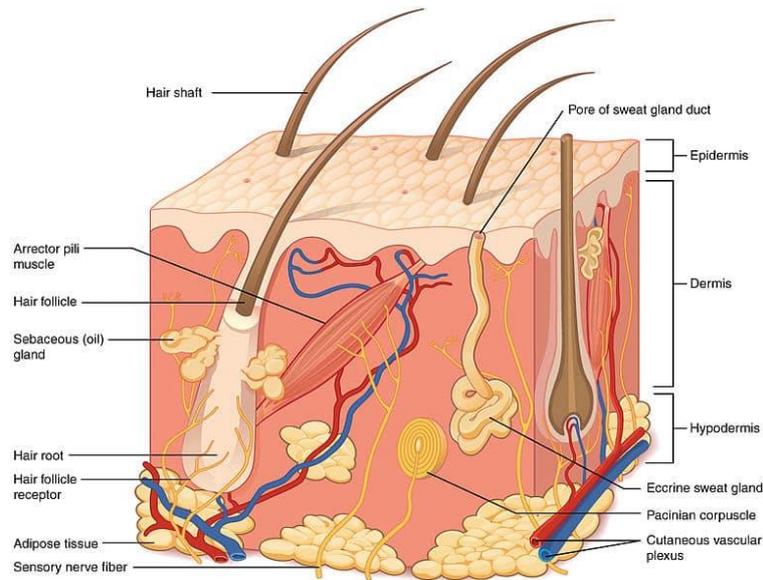
**Natural Cosmetics:** Cosmetics that contain elements obtained from nature are considered natural. Plants and minerals are meant by this. Only natural raw materials are used in these, and natural products are created.<sup>1</sup>

**Synthetic cosmetic:** These are composed of different kinds of compounds. These good's formulations took place in a lab. Put simply, synthetic compositions are produced using artificial means. These come from sources that are natural.

Cosmetics are typically administered externally to the body as preparations. Four categories might be applied to the cosmetic. Cosmetics are formulated as solid, semi-solid or liquid.<sup>2,3,4</sup>

1. Cosmetic for skin
2. Cosmetic for hair
3. Cosmetic for nails

## 4. Cosmetic for hygiene

**Anatomy and Pathophysiology of Skin****What is scrub:**

The Greek word "kosmeticos," which meaning "to beautify," is where the word "cosmetic" originates. Skin is treated using cosmetics, which come in a variety of forms, including liquid, semi-solid, and solid. Herbal cosmetics come in a variety of forms, including sunscreen, anti-acne, nourishing skin care for radiant skin, and skin protection.<sup>12,13</sup> Less adverse effects are experienced. It defines them as items meant to be applied on the human body by rubbing, pouring, sprinkling, spraying, or presenting them in any other way that contributes to cleaning, sparkling, or an appearance that is cautious or attractive. Various plants have been utilized for cleansing and purifying beauty since ancient times. Cosmetics come in a variety of forms, and each one has a specific function for the skin. The largest organ in the body is the skin. protects, conserves water, lubricates, and controls temperature. For a number of reasons, the skin becomes bland rather than heated, but this can be effectively remedied with a scrub. Facial and body scrubs are the two categories of scrubs that are used on the skin. Because facial scrubs are so effective at removing dead skin cells and exfoliating the skin, they often contain a high oil content. Three categories of skin exist: dry skin, oily skin, and sensitive skin.

**Advantages of face scrub:**

1. Luminous, healthy skin that minimizes spots, lessens breakouts and acne, and conceals wrinkles
2. permits product absorption, enhances tan, and keeps pH levels of the body stable.
3. One of the most crucial steps in a facial skincare routine is exfoliating the skin to remove dead or dry skin cells.
4. Scrubbing improves blood circulation, which contributes to healthy, radiant skin and helps with a variety of skin issues.

**Disadvantages of face scrub:**

1. Both vigorous scrubbing movements and chemicals have the eventuality to irritate skin, performing in greenish ness and inflammation. The chemicals in the synthetic diminutives might potentially bring antipathetic responses in people with sensitive skin.
2. Over recalling can affect in open pores which are exposed to pollution and UV shifts at the same time. It also leaves your skin more prone to infections and tanning.

**Ideal Properties of scrub:**

1. It should be non-irritating.
2. It should not be harmful.

3. It should contain tiny, gritty particles.
4. It shouldn't be sticky.
5. It should be mildly abrasive.
6. It should eliminate dead skin.

### **Literature Survey:**

#### **1. Shraddha Mahajan, Devshree Gayakwad, Abhilasha Tiwari, GN Darwhekar; Journal of drug delivery and therapeutics**

The main objective of present study was to prepare a herbo-mineral facial scrub. Majorly facial skin comes in direct contact of dirt, pollution, dust particles and having large number of dead cells. In order to remove the dead cells and make the skin healthy, cleaned and nourished, some facial preparations required. The prepared scrub contains various natural ingredients which are safer for use and having fewer side effects and also they possess antiseptic, anti-infective, antioxidant, anti-aging and humectant properties. The scrub was prepared by using simple mixing method using various ingredients such as poppy seeds, neem extract, tulsi extract, aloe vera gel, almond oil, mixed in carbopol 934, rest of ingredients such as glycerin, triethanolamine, preservatives and perfuming agent were also added to this preparation with homogeneous mixing. The formulated scrub was evaluated for various parameters such as physical appearance, colour, texture, odour, pH, viscosity, irritability, washability, homogeneity, extrudability, spreadability and found fruitful results for all the parameter tested.

#### **2. Roshni Uikey, Rahul Kulsange, Arti Wagh, Priya Nikam, Namrata Mane International Journal of Pharmaceutical Sciences**

Creating a Polyherbal scrub was the major goal of the current Investigation. To live a happy and confident life, cosmetics have today become an integral aspect of daily life for both men and women. Many commercially available skin care products, when used over time, lead to skin dryness, which shortens the lifespan of skin conditions including acne and redness. Scrubs made entirely of herbal elements that promote skin's cleansing, softening, moisturizing and fairness are the best solution for this issue. Cosmetics are the safest thing to use on a regular basis because they have no side effects, and they affect how the skin functions biologically. The prepared scrub was evaluated for various parameters such as appearance, pH, viscosity, spreadability, washability, irritability and found to be satisfied with all required characterization thus the developed formulation can be used as an effective scrub for using it to a healthy and glowing skin.

#### **3. Charulata T Nemade, Nayana Baste World J Pharm**

To remain healthy and of good appearance, the skin surface requires frequent cleansing to remove grime, sebum and other secretions, dead cells, crusts and applied make-ups. In the present work we have formulated the herbal facial scrub by using a different nineteen herbal powders such as turmeric, neem, sandalwood, arjuna, pumpkin, almond oil, sesame oil etc. The scrub was evaluated by using the parameters like Appearance, Smoothness Complexation and effect on acne, Effect on white and black heads, Effect on black spot, Spreadability, Astringent action, Emollient action and Irritation. The scrub shows excellent effects on oily skin, and satisfactory effects of normal and dry skin. All the ingredients use in this herbal facial scrub is of our food ingredient. So, the chances for its side effects are less. The efforts are on to reformulate the scrub in a cream base in order to achieve better Spreadability along imparting emollient and smoothing action of the cream. World J Pharm Res 3 (3), 4367-4371, 2014 To remain healthy and of good appearance, the skin surface requires frequent cleansing to remove grime, sebum and other secretions, dead cells, crusts and applied make-ups. In the present work we have formulated the herbal facial scrub by using a different nineteen herbal powders such as turmeric, neem, sandalwood, arjuna, pumpkin, almond oil, sesame oil etc.

#### **4. Siddhi Pise, Fareed Shaikh, Payaam Vohra Research Journal of Topical and Cosmetic Sciences**

During the puberty, an imbalance of internal constituents and hormonal balance may cause many skin problems. Acne is found as a most common skin problem. The current proposal aims to unfold the potential benefits of coriander to combat acne problems. Medicinal plants are used all over the world to treat various diseases due to its variety of phytochemical constituents. Ideally, topical therapy is the primary treatment for many skin diseases. Among the various topical formulations, face scrub has been considered as a potential vehicle due to its non-sticky nature, stability and greater aesthetic value. The objective of this proposed study was to develop a herbal topical facial scrub formulation containing *Coriandrum sativum* to treat acne and serve as a safe, effective and alternative therapy to the current conventional harmful antibiotics. Extracts of the

selected plant were incorporated into a cream base and evaluated for its physicochemical properties such as pH, spreadability and antibacterial activity against *S. epidermis*.

## 5. Pranjali Talpekar, Monica Borikar Research Journal of Topical and Cosmetic Sciences

For healthy skin regular cleansing of skin to remove dirt, dead cell, sebum etc was necessary. Facial Scrub contain Natural/Synthetic exfoliant give exfoliation effect remove dead cell etc. In this study; formulation and development of Face Scrubs using Natural exfoliant (Jojoba meal) and Synthetic exfoliant (Polyethylene Beads) in concentration 1%, 1.5% and 2%. Comparative study between Scrubs with Natural and Synthetic exfoliant was did for exfoliation effect. Scrub evaluated for Stability Study at Room temp (27°C), Cold temp (4°C) and accelerated temp (45°C), Spreadability and Total Fatty Matter (TFM) content. Subject test on 20 healthy volunteers was done to examine Skin irritation and dead cell removal property of scrub. Dead cell removal property studied by Tape Stripping Method.

### Material And Method:

#### 1. Aloe vera

Aloe vera is used to soften and moisturize the skin. It protects the skin and helps retain humidity. Aloe's high nutritive and antioxidant content may promote briskly healing. Aloe vera cools the skin. It promotes the regeneration of aged skin.<sup>20</sup>

- Synonyms: Aloe, Amrut
- Biological Source: Aloe is a dried juice derived from the leaves of *Aloe barbadensis* Miller (Curacao aloes), *Aloe perryi* Baker (Socotrine aloes), hybrids of *Aloe ferox* Miller and *Aloe Africana* Miller, or *Aloe spicata* Baker (Cape aloes) from the Liliaceae plant family. Indian aloe is derived from wild plants of Aloe Vera.
- Family: Liliaceae
- Taste: very bitter and unpleasant.
- Chemical Constituents: All aloes include yellow crystalline compounds called barbaloin, resin, and aloe emodine. Isobarbaloin is found in Curaçao and Cape aloes. Cape aloes contain  $\beta$  barbaloin,
- Uses: Moisturizer.



Fig: Aloe Vera

#### 2. Multani mitti

Multani mitti provides numerous benefits, including pore reduction and blackhead eradication. Improve blood flow. They contain important nutrients, which assist to reduce acne and give skin a healthy glow. Multani Mitti contains significant magnesium chloride.

- Synonym: Multan clay.
- Biological source: Hydrous aluminum silicates (clay minerals).
- Family: Hydrous magnesium aluminum silicate.
- Description Color: White Odor - Pleasant It has a pleasant taste.
- Chemical Constituents: Montmorillonite, Kaolinite, Attapulgite
- Uses: Oil absorbent.



Fig: Multani Mitti

### 3.Neem

Neem leaves are used to heal skin ulcers and leprosy. This product's antibacterial and antioxidant properties effectively remove dirt and microorganisms from the skin. Some of the health benefits include treating acne, rashes, and skin infections.

- Synonyms: Neem, Maegosa, Nim.
- Biological source: *Azadirachta indica*, A. Juss, also known as *Melia azadirachta*. Linn.
- Family: Meliaceae
- Color: Green yellow. Taste: Bitter
- Chemical constituents: The different parts of Neem tree contain different constituents. Among them, the active ingredients are azadirachtin, salannin and meliantriol. The neem leaves contain nimbosterol and quercetin . The seeds contain azadirachtin, salanin, meliantrol and meliacin. The trunk bark contains nimbin, nimbinin, nimbidin, nimbosterol and a bitter principle called margosine. Neem oil is expressed from seeds and it contains chiefly glycerides of oleic (50%) and stearic (20%) acids.
- Uses - Treat dry skin.



Fig: Neem

### 4.Amla

Its high antioxidant and vitamin C content helps to minimize dark spots and hyperpigmentation.<sup>22,23</sup> By scavenging free radicals in your skin cells, the antioxidant and other polyphenols in amla contribute to the natural lightening of your skin.

- Biological Source: The fruits of the plant *Emblia officinalis* Gaerth (*Phyllanthus emblica* Linn.) are both fresh and dried.
- Family: Euphorbiaceae.
- Color: Light yellow turns from green.
- Taste: Sharp and harsh.
- Chemical components: Ascorbic acid, or vitamin C, is abundant in amla fruit and contains 600—750 mg per 100 grams of fresh pulp. In addition, fruits have a 0.5% fat, 5% tannin, and a phyllembelin content. Amla fruits are also a good source of calcium, iron, and phosphorus. It has a noticeable pectin content.<sup>24</sup>
- Uses: Reduce Hyperpegmentation



Fig: Amla

## 5.Kalonji

Antibacterial in nature. Natural oils have anti-bacterial properties and can help prevent acne by battling skin problems. Applying a diluted solution of *Nigella sativa* oil to the skin can help minimize acne.

- Synonym: Black Caraway
- Family: Ranunculaceae
- Biological source: *Nigella sativa*
- Chemical constituents: include unsaturated fatty acids such as arachidonic, eicosadienoic, linoleic, linolenic, oleic, almitoleic, palmitic, stearic, and myristic acid, as well as beta sitosterol, cycloeucalenol, cloartenol, sterol esters, and sterol glucoside.<sup>25</sup>
- Use: Antibacterial.



Fig: Kalonji

## 6.Tamarind Peel

Tamarind peel powder is a natural exfoliant that removes dead skin cells, scrubs the skin, and improves blood circulation. Tamarind powder removes oil, sebum, and other skin secretions, resulting in lighter skin tone.

- Biological source: Tamarind is made from dried, mature fruits (free of the brittle epicarp) of *Tamarindus indica* Linn.
- Chemical constituents: Tamarind contains 30-40% of invert sugar; 10% tartaric acid, about 8% of sodium potassium tartarate; and pectin. Seeds are full of starch and are used for sizing in textile industry. Dry bark of tamarind contains 15-25% tannin.<sup>26</sup>
- Family: Leguminosae
- Uses: Exfoliant



Fig: Tamarind Peel

**Herbal Drugs And Excipients****Method Of Preparation:**

- Carefully weighed all the powdered herbs, such as amla and neem, and filtered through sieve number 120 before blending them evenly in a mortar and pestle.
- Precisely weighed fuller's earth, kalonji powder, and tamarind peel mixed equally in pestle and mortar.
- Mix the first mixture with the second herbal powder mixture.
- Then for fragrance, add rose water and aloe vera gel.
- Then, as a preservative, add 1-2 drops of methyl paraben and glycerine.

**Apparatus:**

1. **Beaker:** Beaker are useful as a reaction container or to hold liquid or solid sample. They are also used to catch liquids from titration and filtrate from filtering operations. Beakers are available in a wide range of sizes, forms 1 milliliters up to several liters. A beaker is distinguished from a flask by having straight rather than sloping sides. The exception to this definition is a slightly conical sided beaker called a Philips beaker. The beaker shape in general drink ware is similar It is used to liquid volumes containment and measurements.
2. **Glass rod**
3. **Mortar and pestle:** It is used for crushing and grinding substances or ingredients into a fine paste or powder. The mortar is a bowl, typically made of hard wood, ceramic or stone and the pestle is a heavy and blunt club- shape object, the end of which is used for crushing and grinding. The substance to be ground, which may be wet or dry, is placed in the mortar were the pestle is pounded, pressed , or rotated into the substance until the desired texture is achieved.
4. **pH meter:** pH meter is an instrument used to measure acidity or alkalinity of a solution also known as pH. pH is the unit of measure that describes the degree of acidity or alkalinity. It is measured on a scale of 0 to 14. The quantitative information provided by the pH value expresses the degree of the activity of an

Name of herbal drug	Botanical name	Family	Cosmetic uses	Quantity
Aloe Vera	<i>Aloe barbadensis</i>	Liliaceae	Moisturizer	Q.S
Fullers Earth	<i>Bentonite clay</i>	Hydrous magnesium aluminium, silicate	Oil absorbent	25%
Amla	<i>Phyllanthus embica</i>	Euphorbiaceae	Reduce hyper-pigmentation	10%
Neem	<i>Azardicachta indica</i>	Meliaceae	Treat dry skin	3%
Kalonji	<i>Nigella sativa</i>	Ranunculaceae	Antibacterial	7%
Tamarind peel	<i>Tamarindus indica</i>	Leguminosae	Exfoliant	2%

acid or base in terms of hydrogen ion activity. The pH value of a substance is directly related to the ratio of the hydrogen ion [H<sup>+</sup>] and the hydroxyl ion [OH<sup>-</sup>] concentrations. If the H<sup>+</sup> concentration is greater than OH<sup>-</sup>, the material is acidic; i.e., the pH value is less than 7.<sup>27</sup>

**FORMULATION BATCHES****Batch F1:**

<b>Ingredients</b>	<b>Quantity</b>
Multani mitti	2.5gm
Amla	1gm
Neem	0.30gm
Kalonji	0.7gm
Aloe Vera	q.s
Rose water	q.s
Methyl parabean	2-4 drops
Glycerin	1 ml
Tamarind peel	0.20gm

**Batch F2:**

<b>Ingredients</b>	<b>Quantity</b>
Multani mitti	2gm
Amla	2gm
Neem	1.5gm
Kalonji	0.10gm
Aloe Vera	q.s
Rose water	q.s
Methyl parabean	2-4 drops
Glycerin	1ml
Tamarind peel	0.50 gm

**Batch F3 :**

<b>Ingredients</b>	<b>Quantity</b>
Multani mitti	2gm
Amla	1.5gm
Neem	2 gm
Kalonji	0.20 gm
Aloe Vera	q.s
Rose water	q.s
Methyl parabean	2-4 drops
Glycerin	1 ml
Tamarind peel	0.70 gm

**Evaluation Parameters:**

**1.Colour:** You might effectively examine the face scrub's color.

**2.Odour:** The product's fragrance was evaluated by applying it to the palm of the hand and smelling the flavor.

**3.pH:** Applying the product to ph paper will indicate the product's pH. An aqueous formulation with a pH of 1%.

**4.Consistency:** The evaluation of the preparation's texture and homogeneity on the skin, including its grittiness, greasiness, and stiffness effect, was based on the consistency of the formulation and particles. The semi-solid preparation came from nature.

**5. Washability:** Formulas are readily applied to the skin and removed with a hand inspection and a water wash. Gritfulness By putting the product to the skin, one may determine whether it contains any grit.

**6. Irritability:** It has been observed that a small amount of the scrub is non-irritating when applied to the skin and kept on for a few minutes.

**7. Stability Studies:** Filling plastic containers with scrub and setting them in a humidity room at 45°C and 75% relative humidity will evaluate the formulation's stability. For three months, the formulation's stability can be examined one month at a time.

**8. Spreadability:** When it comes to the behavior of the gel that emerges from the tube, spreadability is crucial. It's employed to determine how far the gel can spread across the skin. One glass slide held a little amount of sample, and another slide with 100 g of weight was positioned above them. The amount of time it took for the gel to spread across the slide was measured and recorded; it took 4 cm in 60 seconds. The formula used to calculate it was as follows:

$$S = mxl/t$$

S = Spreadability

M = Weight placed on slide

L = Length of the glass slide

t = Time taken in seconds

## **RESULT AND DISCUSSION:**

### **Result:**

The formulation was assessed based on its physical characteristics, including appearance, pH, and color. Smooth appearance was noted by users of an antibacterial herbal face cleanse. Every assessment criterion for the herbal scrub was examined, including the organoleptic and physicochemical ones. This herbal scrub met all evaluation criteria and is quite helpful. Aloe vera, Fullers earth, Amla, Kalonji, and Tamarind peel are the principal ingredients in these scrubs. Antioxidant nutrients are abundant in these substances. The formulation was colored greenish. All of the F1, F2, and F3 results demonstrated semi-solid consistency. Based on the evaluation of the formulation's properties, we were able to determine that it was easily washable. It was discovered that pH and skin physiology were compatible.

Parameters	Result
Colour	Greenish
Odour	Maple syrup like
pH	4-6
Irritability	Non irritant
Stability	Stable
Consistency	Semisolid
Spreadability	Uniform
Washability	Easily washable
Removal	Easily removal

## Discussion

We have very accurate data because there is a decrease in the amount of neem extract in batches F1 and F2. Compared to F1&F2, the F3 formulation exhibits more accurate properties. Since every parameter of the F3 batch was more appropriate, the F3 batch was chosen. The F2 formulation did not yield satisfactory outcomes. As a result, the ideal amount of neem extract was employed to determine the proper formulation, and the F3 formulation produced excellent results. In a similar manner, varying amounts of each ingredient were introduced until the desired outcomes were achieved.

## CONCLUSION:

Since natural sources and their therapeutic goods with a variety of medicinal plants as main ingredients are thought to have far healthier benefits than other synthetic products with a long list of side effects, they have gained a lot of acceptance. The skin is the body's outermost organ and is subjected to pro-oxidative environments such as air pollution, UV radiation, and medications. A herbal scrub that is beneficial to the skin can be made with the aforementioned substances. After the herbal scrub was created and tested, every test was successful. This prepared scrub cleans, nourishes, and protects against the aging effects of acne. As a result, there is a growing market need for herbal formulations.

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