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Polyherbal Facial Exfoliator Using Natural Ingredients

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ABSTRACT

Herbal cosmetics are natural and safe as compared to chemical-based cosmetics. The main objective of the present study was to formulate and evaluate herbal scrub. The scrub was formulated using various herbal powders such as sandalwood, turmeric, cinnamon, orange peel, neem. Other ingredients like Kaolin, Bentonite and Glycerin were also added to the formulation. The herbs used in the formulation have anti-inflammatory, cleansing, anti-microbial and anti-oxidant activity. The aim behind the action of scrub is to exfoliate, remove blackheads and whiteheads, reduce acne and impart glow to the skin. The scrub was evaluated on the basis of different parameters such as nature, colour, consistency, homogeneity, spreadability, irritability and others. It showed excellent action on dry and normal skin. The developed formulation cleanses, moisturizes, soothes the skin and also reduces skin related issues leaving behind healthy and flawless skin.

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INTRODUCTION

Cosmetics are products that are applied to the skin in order to cleanse, beautify, enhance attractiveness and to change appearance. The Greek term "kosmtikos," which means to have power, order or ability in decorating is where the English word "cosmetic" originates.[1–5] More than 10% of the body's mass is made up of skin, as well as it is the largest organ and first line of defense.[1,4,5]

Itchy, painful, red, swollen skin can frequently result from exposure to chemical agents, radiation, mechanical stress and biological agents like parasites and microorganisms. These agents also cause dull, lifeless skin and reduce glossiness.[3,5] Cosmetics are intended to decrease oil production, treat acne, and lessen the appearance of wrinkles. Formulations for different skin conditions, skin protection, sunscreen, anti-acne, anti-wrinkle, and anti-aging, are accomplished by utilizing a variety of materials, both natural and synthetic.[6] Due to their dual purpose as medications and cosmetics, herbal cosmetics are in high demand nowadays. Cosmetics and products for face skin care can either help or worsen facial dermatoses. A healing biofilm may be established and facial redness can be reduced with the use of skin care products that are properly chosen.[8]

The herbs employed in cosmetic preparations have a variety of qualities, including antioxidant, anti-inflammatory, antiseptic and antibacterial characteristics. These herbal products assert that they don't have any adverse effects.[2,3,6,7] Scrubbing is the removal of dead skin cells from the skin's surface using a granular powder and an exfoliating tool. This stimulates oxygenation of the entire skin surface and improves blood circulation. A facial scrub often has a cream or gel base and tiny exfoliating granules.[7]By exfoliating skin cells from the surface and promoting cell growth in the sub-epidermal layer, herbal exfoliants reduce age-related changes and environmental damage.[5] The skin can be exfoliated in two different methods.

- Physical exfoliation: Abrasive substances are applied to the skin and gently rubbed into the skin in circular motions with the hands or a rough sponge.

- Chemical exfoliation: Chemically breaks down the initial adhesion holding together dead (keratinized) skin cells before penetrating the top layer of skin to completely remove dead cells.[1]

There are two different kinds of scrubs that are applied to the skin: facial scrubs and body scrubs. The only difference between these two is the amount of sugar and oil added to each. Face scrub uses a lot of oil, which makes it less abrasive[2,3] Using a small cosmetic pad or applying scrubs straightto the skin both are recommended. Scrub is advised to massage for at least 10-15 min.

Ideal properties of Exfoliant.

1. Non-toxic
2. Contain fine grit particles
3. Mild abrasive
4. non-irritating
5. Non-adhesive
6. Eliminates dead skin[1]

Benefits of Scrubbing[1,7]

1. Scrubbing makes skin free from dirt, oil and sweat.
2. Involves removing flakes from skin
3. Eliminates dead skin.
4. Brightens the skin.
5. Eliminates dark spots.
6. Removes acne scars.
7. Prevents ingrown hair.
8. Makes skin smoother.
9. Facilitates clear complexion

Benefits of natural ingredients used in facial scrub.

Neem (Azadirachta indica): As far back as 4500 years ago, neem was emphasized for its use as a wonder drug. Neem is considered a natural source of raw materials for the industrial production of cosmetics. Neem is also known to have antimicrobial, antioxidant and anti-inflammatory activity.[8,9] It is effective in treating skin infections, rashes, acne and as a blood purifier for radiant and healthy skin.[10,11] It plays an important role in expelling blackheads and dirt from the skin.[12]

Figure no 1: Neem powder

Caffeine (Coffea arabica): Caffeine is an alkaloid that can be found in coffee, tea and some soft drinks. Due to its strong biological activity and capacity to permeate the skin barrier, caffeine is being used more frequently in cosmetic products. Caffeine has potent antioxidant properties. It helps protect cells against UV radiation and slows down the process of photoaging the skin.[13] Caffeine also plays an important role in scrubbing and reducing dark circles.

Figure no 2: Caffeine powder

Cinnamon bark (Cinnamon verum): Several resinous substances are found in cinnamon, including cinnamaldehyde, cinnamate, cinnamic acid, and numerous essential oils. Cinnamon's scent, which may be blended into a variety of meals, fragrances, and medicinal products, makes it mostly used in the aroma and essence industries.[8] Cinnamon possess antibacterial, antioxidant, antifungal activity.[4,8] It also plays an important role in removing dirt and blackheads.

Figure no 3: Cinnamon powder

Sandalwood (Santalum album): It is a dried bark of Santalum album, belonging to the family Santalaceae. Major chemical constituents are Esters, Credol, Santalol.[14] It is widely used in the cosmetic industry. Sandalwood soothes the skin, removes tan and makes skin brighter[15]. It alsohas a cooling effect.

Figure no 4: Sandalwood powder

Orange peel (Citrus sinensis): Orange peel is employed in facial cosmetics. It is an excellent source of vitamin C (L-ascorbic acid) and B, flavonoids and terpenes[16]. Ascorbic acid benefits theskin in a variety of ways, but it primarily improves collagen production and photoprotection[12]. It guards against oxidative stress, skin dehydration and free radical damage. Additionally, it prevents wrinkles, aging, acne, blemishes and has an instant glow quality.

Figure no 5: Orange peel powder

Fullers earth (Multani mitti): Fullers earth mainly consists of aluminium silicate, Kaolinite and Attapulgite. In Asia, it is used as a cleansing agent for skin and hair.[17] It helps in the removal of blackheads, reduces oil and also nourishes the skin.

Figure no 6: Fullers earth

Aloe vera (Aloe barbadensis): Currently, one of the most significant ingredient used in the fieldof cosmetics is Aloe vera. It has anti-bacterial, anti-inflammatory and healing properties. Aloe vera enhances the skin's capacity to hydrate itself and also helps in the removal of dead skin cells.[18] It treats acne, dark spots, skin allergies and makes skin brighter.

Figure no 7: Aloe vera Juice

Turmeric (Curcuma longa): The major chemical constituents present in turmeric are curcumin, volatile oils, and curcuminoids. It treats skin disorders caused due to blood impurities.[16] It works as a natural antiseptic and antibacterial agent. The primary component of turmeric, curcumin, has been found to provide a variety of therapeutic benefits.[15,19]It makes skin fairer, soft and smooth by eliminating blackheads and blemishes.

Figure no 8: Turmeric powder

Other ingredients used in formulation of herbal scrub:

1. kaolin: It is an absorbent clay that provides cleansing effect. Kaolin also exfoliates the skinfurther, absorbing excess oil. It promotes skin detoxification.

2. Bentonite: Bentonite is an absorbent aluminium phyllosilicate clay. It is natural, abundant and inexpensive in nature. Bentonite has been applied externally to the skin from a long period of time. It acts as a detoxifying agent. Considering its skin adhesion and water resistance properties make Bentonite an excellent substrate for skin products.[20]

3. Glycerin: Glycerin is widely used in the cosmetic and herbal industries. It is a gelatinous and thick liquid. It functions as a humectant and emollient, which keeps skin hydrated and prevents dryness.[21]It imparts glow to the skin making it softer.

4. Sodium Lauryl Sulphate: Sodium lauryl sulphate is dodecyl sodium sulphate sodiusalt. It is white to pale yellow in colour with bitter taste.[22]It is used as a foaming agent in cosmetics. Ithas cleansing and anti-microbial property.

5. Cetyl alcohol: Cetyl alcohol acts as an emulsifier, emollient and thickening agent. It is primarily used in pharmaceutical and cosmetics preparations. It also enhances stability and has hydrating properties.

6. Methylparaben: To prevent microbial contamination, methylparaben is frequently used as a preservative, either alone or in combination with other parabens to cosmetics, pharmaceuticals and food items.[23]

FORMULATION OF HERBAL SCRUB

Table no. 1 – Formulation of herbal scrub

Sr.No.	Ingredient	Quantity taken	Category
1	Neem	1gm	Anti-inflammatory
2	caffeine	1gm	Skin softening
3	Cinnamon bark	1gm	Exfoliant
4	Sandalwood	1gm	Cooling effect
5	Orange peel	1gm	Reduces blemishes
6	Fullers earth	1gm	Oil controlling
7	Aloe vera juice	1.2gm	Skin hydrating agent
8	Turmeric	1gm	Antiseptic
8	Kaolin	5.6gm	Cleanser
9	Bentonite	1.2gm	Detoxifying agent
10	Glycerin	2.4gm	Emollient
11	Sodium Lauryl Sulphate	0.1gm	Foaming agent
12	Cetyl Alcohol	0.4gm	Stabilizer
13	Methylparaben	q.s.	Preservative
14	Water	q.s.	Vehicle

Procedure:

Mix neem powder, orange peel powder, caffeine, cinnamon powder, sandalwood powder, turmeric, fullers earth, kaolin, Bentonite, Sodium lauryl sulphate, glycerin, aloe vera juice, Methylparaben and water in a beaker. In another beaker heat cetyl alcohol in a water bath till it melts. Heat the powder mixed with water up to the same temperature. Then, add the molten cetyl alcohol to this with stirring. Keep stirring after removing from the water bath till 45°C temperature is attained. Continue stirring till room temperature is attained.

EVALUATION OF HERBAL SCRUB:

The following evaluation parameters were performed to ensure superiority of the prepared herbal face scrub.

1. Organoleptic Evaluation:

Physical appearance of the prepared formulation was observed visually. In this test colour, odour,nature and consistency were studied.[1]

2. Homogeneity:

The homogeneity of the scrub was inspected virtually.[24]

3. Irritability:

A little quantity of the scrub was applied on to surface of the skin and kept for a few minutes.[2]

4. Washability:

A little quantity of scrub was applied over the skin and washed with water.[4,5]

5. Grittiness:

Grittiness was checked manually.[5]

6. Foamability:

In a measuring cylinder, a little amount of scrub was shaken with water and the foam was measured.[2,25]

7. pH:

The pH of prepared scrub formulation was determined by using a digital pH meter.[24]

8. Extrudability:

Extrudability was calculated as the ratio of sample amount to the time needed for the sample to completely extrude from the container. i.e. Sample amount/ time required.[7]

9. Spreadability of scrub:

A small amount of the scrub was placed on the glass slide and another glass slide was placed on the gel. A wooden weight of 20gm was placed on it. The time required for the scrub to spread and the area was measured. The amount and the area of scrub on the glass slide

represent the efficiency of spreadability, i.e. Spreadability= M ×L/T.[2,]

10. Patch test:

A patch test was carried out by putting a small patch of the prepared scrub on the skin to observeallergic reactions.[2]

Table no. 2 – Evaluation tests of scrub

Evaluation Parameters	**Result**
Colour	Yellowish green
Odour	Aromatic and Pleasant
Nature	Semisolid
Consistency	Smooth
Homogeneity	No aggregation
Irritability	Non irritant
Washability	Easily washable
Grittiness	Small gritty particles
Foamability	Foam volume 25ml in 2min.
pH	7.1
Extrudability	Easily extruded
Spreadability	5.2gm-cm/sec
Patch test	No allergic reaction

RESULT AND DISCUSSION

In the present study, Polyherbal scrub was formulated and evaluated according to above mentioned tests. As the ideal pH of scrub is 7.0–7.4 so, it is non-irritant to the skin. Thus, pH of the formulated scrub was found to be 7.1. The ideal foamability of herbal scrub is 20-35ml in 2 minutes. So, foamability of the formulated scrub was also found to be within the ideal range, i.e., 25ml in 2min. Furthermore, the ideal spreadability of scrub is 5.0 to 5.8

gm/cm/sec, which was also within the ideal range. The use of herbal ingredients minimized the chances of side effects on the skin.

The action of scrub was studied on different individuals according to their skin type and also ondifferent factors related to appearance. The results are shown in table no.3.

Table no. 3 – Individual evaluation

Sr. No.	Factors	Dry skin	Normal skin	Oily skin
1	Smoothness	+++	+++	++
2	Effect on acne	++	+++	+
3	Effect on blackheads	+++	+++	++
4	Effect on whiteheads	+++	+++	+++
5	Complexation	++	++	++
6	Effect on dark spots	+++	+++	++
7	Spreadability	+++	+++	++
8	Emollient action	+++	+++	+++
9	Irritation	-	-	-

Good - +; Better - ++; Excellent - +++

CONCLUSION

The formulated polyherbal scrub was found to show effective action on the removal of blackheads and whiteheads. According to individual evaluation, the scrub showed excellent effects on dry and normal skin. It showed better results on oily skin. The scrub cleanses, nourishes, moisturises and protects the skin. It exfoliated the skin without scratching the skin surface. The formulated polyherbal scrub did not show any side effects or irritation to the skin. The herbal ingredients were found to be soft on the skin and also gave results within 1-2 use. The formulated polyherbal scrub passed all the evaluation tests and also improved appearance.

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