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FORMULATION AND EVALUATION OF MULTIUSE POLYHERBAL FACE SCRUB

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ABSTRACT

The primary aim of the current investigation was to develop a polyherbal exfoliant integrated into a gel matrix. Utilization of botanical components for combating acne, wrinkles, and regulating sebum production is referred to as natural or herbal cosmetics. Herbal cosmeceuticals typically feature botanical extracts with antimicrobial, antioxidant, and anti-aging attributes. Herbal cosmetics are considered the most benign option for regular application due to their lack of adverse reactions, whereas cosmeceuticals are formulations that modulate the physiological functions of the skin. The formulation incorporates neem powder, tulsi powder, cinnamon powder, orange peel powder, bees wax, poppy seeds, multani mitti, rose water, honey, sodium lauryl sulfate, methyl parabens, and glycerine as active constituents within a gel base prepared with various grades of tragacanth.

KEYWORDS: Scrub, Antiseptic, Exfoliation, Consistency, Spreadability, Antioxidant, Anti-aging, etc.

INTRODUCTION

The skin, being the largest organ in the human body, envelops the entire external surface, providing protection against a multitude of factors. With a surface area ranging from 1.5 to 2m^2, the skin functions as the body's primary defense mechanism against pathogens, ultraviolet (UV) light, chemical substances, and physical trauma. Moreover, it plays a crucial

role in regulating body temperature and controlling the release of water into the surrounding environment.

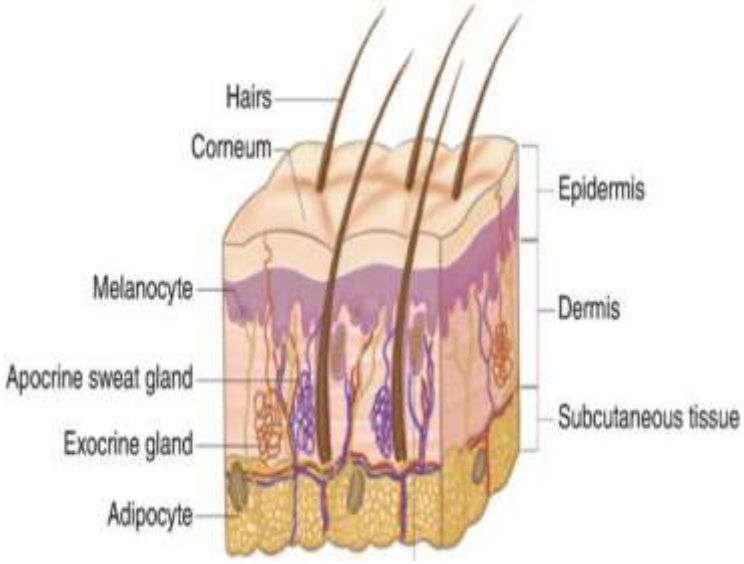

Fig. no. 1: Structure of skin.

Face scrub

Facial scrub is a cosmetic or beauty product, or a treatment designed to cleanse and exfoliate the skin of the face or body. The use of facial scrubs proves beneficial in the removal of dirt, dead skin cells, sebum or oil, blackheads, and whiteheads, thereby contributing to the maintenance of skin appearance. It is essential to consider the three primary skin types: oily skin, sensitive skin, and dry skin. Individuals with dry skin should opt for a facial scrub that incorporates moisturizing and hydrating ingredients. Those with sensitive skin, on the other hand, are advised to utilize a gentle scrub. For individuals with oily skin, an exfoliation method is recommended to prevent pimples, dullness, breakouts, and regulate oiliness. Depending on the specific skin type, the frequency of facial scrub usage is typically recommended to be either twice or thrice a week. However, newcomers to facial scrubbing are generally advised to begin with a weekly routine. Individuals with dry or sensitive skin types, in particular, should limit exfoliation to once or twice a week. In certain cases, individuals with acne-prone skin are encouraged to consider products containing salicylic acid, as well as a dermatologist-grade 4% glycolic and polyhydroxy acid complex. These components aid in skin exfoliation, acne clearance, and the promotion of a smoother skin appearance.

Benefits of face scrub

1. Assists in the Elimination of Dead Cells: Facial or body scrubs are skincare products that penetrate beyond the surface layer to eliminate dead skin cells and reveal the radiant, healthy skin underneath.
2. Liberates the skin from Flakes: The shedding of the outermost layer of skin (epidermis) is commonly known as flaky skin, resulting in dry patches. Incorporating scrubbing into your skincare routine can effectively address flaky skin.
3. Profound Cleansing of the Skin: By exfoliating the skin, one can effectively rid it of dirt, oil, and sweat that may not be removed by regular cleansing methods such as face wash or facial cleansers.
4. Effectively eliminating dust accumulated on the skin's surface, scrubbing proves to be a thorough method for this task.
5. Enhances the skin's radiance and texture: Scrubbing plays a vital role in imparting radiance and a smooth texture to the skin.
6. Eradicates Acne Scars: Through the removal of dead skin cells, scrubbing also helps in getting rid of acne scars on the skin.
7. Enhances Skin Hydration: Facial scrubs contain moisturizing and hydrating agents. Exfoliating the skin facilitates better absorption of moisture, leaving the skin feeling soft and well-nourished.
8. Alleviates Stress: The act of exfoliating or scrubbing the skin provides a therapeutic massage that promotes relaxation and helps in reducing stress levels.

Objectives

1) The objectives of this study were to formulate the face scrub which does not cause any side effect or minimal side effects.
2) To evaluate the prepared herbal face scrub for glowing of skin.
3) Herbal face scrub is used to rejuvenate the muscles, maintain the elasticity of the skin, remove adhered dirt particles and improve the blood circulation.
4) Herbal face scrub is nontoxic in nature.

MATERIAL AND METHODOLOGY

Ingredients

1. **Neem leaves powder**

Fig. no. 02: Neem leaves powder.

- Synonym - Neem
- Biological source - It consists of dried leaves of Azadircta indica belonging to family Meliaceae.
- Description Colour - Green Odour - Pungent Taste - Bitter
- Chief chemical constituents Nimbinin, Nimbidin, Quercetin
- Uses - Antifungal, antibacterial, antiseptic and anti-inflammatory, lightens scars, tackles whiteheads and blackheads.

2. **Tulsi leaves powder**

Fig. no. 02: Tulsi leaves powder.

- Synonym- Tulsi
- Biological source -It consists of dried leaves of Ocimum sanctum L belonging to family Lamiaceae.

- Description Colour - Green Odour - Aromatic Taste – Pungent
- Chief Chemical constituents - oleanolic acid, ursolic acid, rosmarinic acid
- Uses - Prevents Acne and Pimples, Improve skin texture, Cleanser.

3. Orange peel powder

Fig. no. 3: Orange peel powder.

- Synonym - Orange zest
- Biological source -It consists of dried fruits of Citrus sinesis belonging to family Rutaceae.
- Description Colour - Dark orange red Odour - Aromatic Taste – Bitter
- Chief chemical constituents - Terpenes, Carotenoids, Flavonoids
- Uses - Reduce skin marks, skin spots, help to skin whitening, Treat pimples, acne.

4. Cinnamon powder

Fig. no. 4: Cinnamon powder.

- Synonym - Ceylon cinnamon

- Biological source - The source of cinnamon bark and leaf oils, is an indigenous tree of Sri Lanka, although most oil now comes from cultivated areas. C. zeylanicum is an important spice and aromatic crop having wide applications in flavoring, perfumery, beverages, and medicines.
- Description Colour - The color cinnamon is a warm, medium shade of brown with a red-orange hue
- Chief chemical constituents- Cinnamon consists of a variety of resinous compounds, including cinnamaldehyde, cinnamate, cinnamic acid, and numerous essential oils
- Uses - Antiseptic, Anti-Inflammatory, Prevents Ageing

5. Multani mitti

Fig. no. 5: Multani mitti.

- Synonym- Multan clay
- Biological source It consists of hydrous aluminum silicates (clay minerals).
- Description Colour- White Odour - Pleasant Taste – Pleasant
- Chief chemical constituents - Montmorillonite, Kaolinite, Attapulgite
- Uses- Nourishes skin, reduce oiliness, Remove blackheads.

6. Honey

Fig. no. 6: Honey.

- Synonym- Shahad
- Biological source -It consists of saccharine liquid prepared from the nectar of the flowers by the Honey-bee Apis mellifica belonging to family Apadae.
- Description Colour - Yellow brown coloured liquid Odour - Sweet Taste - Sweet
- Chief chemical constituents - Dextrose and laevulose (70-80%) Dextrin (0.06-1.25%) Proteins
- Uses - Good for wrinkles and aging Prevent acne Remove dirt from pores

7. Bees wax

Fig. no. 8: Bees wax.

Beeswax (Also known as Cera Alba) is a natural wax produced by honey bees of the genus *Apis*. The wax is formed into scales by eight wax-producing glands in the abdominal segments of worker bees, which discard it in or at the hive. Chemically, beeswax consists mainly of esters of fatty acids and various long-chain alcohols.

- Uses

- Beeswax is a natural skin softener that provides deep moisture and prevents water loss. It can be used in skin moisturizers, creams, and lip balms.
- Beeswax is high in vitamin A, which helps protect skin from signs of aging.

8. Poppy seeds (Khus khus)

Fig. no. 9: Poppy seeds (Khus khus).

Poppy seeds are renowned for their mild exfoliating properties and anti-inflammatory attributes, in addition to their capacity to soften and hydrate the skin, thus rejuvenating its youthful radiance. Furthermore, they encompass a diverse array of chemical components, such as morphine alkaloids (morphine), noscapine (thebaine), papaverine (papaverine), and dietary fiber, as well as essential minerals like magnesium, manganese, phosphorus, zinc, and iron. The makeup of poppy seeds consists of 6% hydroxy carbohydrate, 28% carbohydrate, 42% fat, and 21% protein.

9. Sodium lauryl sulfate (SLS)

It is commonly utilized in cosmetics as an emulsifier or surfactant, aiding in the stabilization and thickening of solutions containing solubility-variable ingredients, thus promoting a more consistent texture for enhanced application.

10. Methyl paraben

A prevalent type of paraben, is frequently incorporated into cosmetic formulations to inhibit microbial proliferation, and can also be naturally sourced from certain fruits for use as a preservative in both food and antifungal applications.

11. Glycerin

It is known to serve various functions in cosmetics, such as denaturation, fragrance enhancement, hair conditioning, moisture retention, oral care support, skin protection, and viscosity modulation.

12. Rose water

Rose water is employed for various purposes such as alleviating skin irritation, soothing sore throats, reducing skin redness, aiding in the prevention and treatment of infections, containing antioxidants, promoting the healing of cuts, scars, and burns, uplifting mood, alleviating headaches, possessing anti-aging attributes, and soothing digestive issues.

13. Ylang ylang (Perfume)

Ylang ylang essential oil can be used topically to improve the appearance of skin, even out skin texture, and promote a glow. It has a calming and soothing effect that can help reduce redness, irritation, and inflammation. It can also help manage sebum production, reduce oxidative stress, and act as an anti-aging agent.

14. Tragacanth gum

Tragacanth acts as the Stabilizing agent in the formulated face scrub.

Method or procedure

In order to formulate the face scrub these are the following steps:

- All the ingredients readily prepared were brought from the market.
- The ingredients were weighed according to the formula specified in the formulation.
- The weighed powder and other ingredients were mixed together to form three formulations (phase 1).
- All the liquid ingredients were mixed in baker (phase 2).
- Then both the phases (Phase 1 and Phase 2) were mixed together to formulate the face scrub.
- The formulated face scrub was evaluated and then packed into a container & labelled.

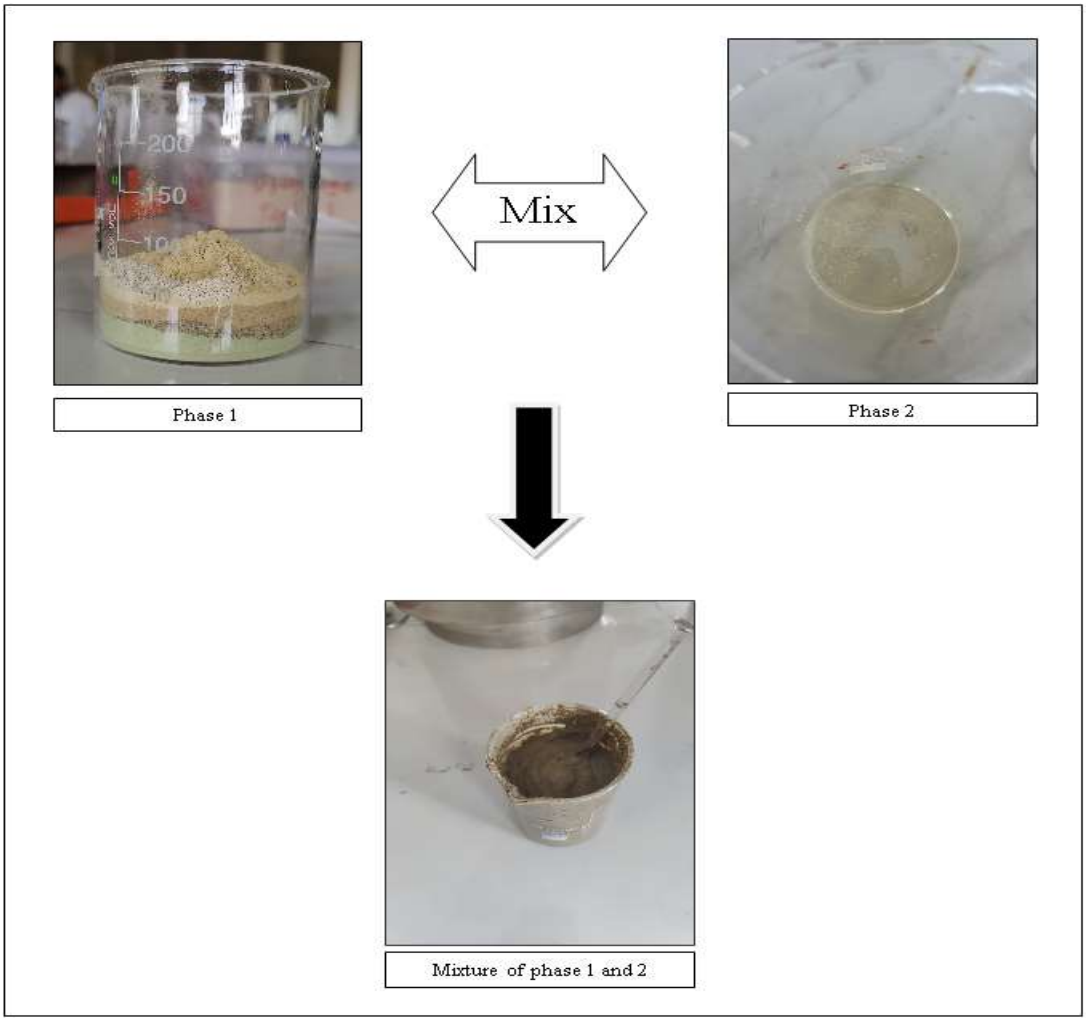

Fig. no. 10: Method.

Formulation table

Table no. 1: Formulation table.

Ingredients	Quantity (F1)	Quantity (F2)	Quantity (F3)
Neem	10g	5g	2.5g
Tulsi	5g	2.5g	2.5g
Cinnomon	5g	2.5g	1.5g
Orange peel powder	5g	2.5g	1.5g
Poopy seeds	3g	5g	5g
Multani mitti	10g	5g	5g
Bees wax	3g	10g	5g
Glycerine	2ml	5ml	5ml
Honey	5ml	5ml	5ml
Sodium laureth sulfate (SLS)	1g	1.5g	2g
Rose water/distilled water	Qs	Qs	Qs
Tragacanth	0.5	1g	1.5g
Chrysopogon zizanioides / vetiver/ khus	-	2g	2g
Ylang Ylang essential oil (perfume)	-	Qs	Qs

Evaluation tests

The assessment of the prepared facial exfoliant was conducted based on a variety of parameters, including organoleptic characteristics, pH level, irritability, washability, grittiness, extrudability, foamability, and spreadability, all of which met the required standards.

The developed product effectively functions as a cleansing exfoliant that enhances skin health and radiance.

Organoleptic properties encompass factors such as

- Color,
- Fragrance,
- Texture, and
- Consistency.

Spreadability

In evaluating spreadability, a small quantity of the exfoliant was placed between two glass slides with a 20g weight to measure the spreading time and coverage area.

PH test

The pH value was determined using a litmus paper on a 1% aqueous solution.

Foamability

To assess foamability, a portion of the exfoliant was applied to the skin followed by a minimal water addition to observe foam formation.

Grittiness

Grittiness testing aims to detect any abrasive particles present in the exfoliant.

Washability

Finally, washability was evaluated by applying the exfoliant on the skin and rinsing it off with water.

RESULT AND DISCUSSION

Table no. 2: Evaluation tests results.

Parameters	F1	F2	F3
Colour	Green	Green	Brownish Green
Odour	Not Pleasant	Pleasant	Pleasant
Texture	Good	Good	Good
Consistency	Bad	Bad	Good
Spreadability	Not Spreadable	Not Easily Spreadable	Easily Spreadable
Foamability	No	No	No
pH	5.2	5.7	5.4
Grittiness	Yes	Yes	Yes
Washability	Easily washable	Easily washable	Easily washable

Formulation F1, F2, and F3 underwent testing for evaluation parameters including color, scent, texture, thickness, spreadability, foamability, washability, pH, and grittiness. All constituents utilized are of botanical origin, thus ensuring the absence of or minimal adverse reactions. Formulation F3 exhibited superior effectiveness in comparison to F1 and F2. The product displayed a brownish-green hue with no discernible unpleasant aroma and lacked foam formation. Its consistency proved suitable for dermal application, while the texture was deemed satisfactory, featuring minute gritty particles. The scrub was easily washable with ordinary water, and its pH level was measured at 5.4, indicating compatibility with the skin. This formulation is deemed suitable for application on all skin types.

CONCLUSION

In this investigation, the primary aim was to develop a natural facial exfoliant that demonstrates efficacy and stability by utilizing medicinal plant compounds as the primary active components. Our analysis revealed that the botanical facial scrub features exfoliating

agents that effectively eliminate impurities from the skin surface, resulting in an instant luminosity. The active constituents within the herbal facial scrub comprise poppy seeds, neem extract, turmeric, and sandalwood extract, which exhibit properties as antimicrobial and antibacterial agents. Furthermore, it was observed that formulations using natural elements in the herbal scrubs exhibit minimal adverse reactions, making them suitable for individuals of all age groups, less likely to cause skin irritation, and promoting immediate skin radiance. Drawing conclusions from the outcomes of this exploration, it is our contention that the herbal facial scrub formulation represents a promising approach for efficacious skin exfoliation.

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