

Formulation & Evaluation of Poly- Herbal Face Scrub for Skin Exfoliation

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Abstract:- Natural beauty is a blessing, and cosmetics aid in displaying and enhancing human attractiveness and individuality. Cosmetics are described as items used for beautifying, washing, boosting attractiveness, or changing one's look. The purpose of this study is to create and assess a Polyherbal face scrub that may be used as an alternative to chemical products. Natural ingredients are used in herbal cosmetics because they have the ability to work against wrinkles, acne, and to regulate the flow of oil from the skin's open pores. Natural elements are the safest and greatest products to use in everyday life since they have no negative effects, and these cosmetics also benefit the environment. In this formulation of facial scrub Amla, Honey, Aloe-vera, Turmeric, Green tea, Coconut oil, Carrot powder, Rice flour, Walnut, Rose water are used as active ingredients. Except beautification this cosmetic product helps in many pharmaceutical ways like Skin Exfoliating agent, Antioxidant, Antitanning, Anti-inflammatory, Moisturizer, Antiageing, and Acne Removing agent. The prepared facial scrub was evaluated for various parameters such as Appearance, State, Consistency, pH, viscosity, Spreadability, Foamability, Washability, Irritability, Homogeneity, Grittiness and all needed characterizations were judged to be satisfactory. As a result, this composition may be used as an effective face scrub to maintain healthy and beautiful skin. Herbal cosmetics are fast expanding since most women choose natural alternatives over artificial items for personal care.

Keywords:- Polyherbal Face Scrub ; skin exfoliating agent ; Herbal Cosmeti ; Anti Oxidant ; Anti Ageing.

I. INTRODUCTION

The body's largest organ is the skin. It acts as a key organ of protection for other body parts. The skin serves as a barrier to protect the inside from external dangers^{[1]-[2]}. Cosmetics are widely used to improve attractiveness and available in a many of forms like Skin protection, sunscreen, anti-acne, and anti-wrinkle products for skin beautification^[3]. The term Herbal Cosmetic implies that herbal cosmetics are entirely natural and free of all dangerous synthetic ingredients that would otherwise be hazardous to the skin^[4]. Face scrubs exfoliates and stimulate blood circulation and promotes skin turnover by removing dead skin cells and adherent cells in the stratum corneum^[5]. Face scrub washes the skin eliminates the debris and oil from pores, accelerates the renewal of skin cells^[6]. There are three different varieties of skin, including dry skin, oily skin,

and sensitive skin^[7]. Because dead skin cells are eliminated by using scrub on daily basis, new skin cells are exposed, resulting in skin that is glowing, soft, and healthier^[8]. After using scrub, it is recommended as to gently massage on the skin to promote blood flow and improve oxygenation of the skin's surface^{[9]-[10]}.

A. Ideal Features of a Face Scrub:-

- It must be non-toxic, mildly abrasive as well as non-sticky.
- Dead skin cells and grime must be removed.
- It must be non-irritating.
- It must have minute grit in it^[11].

B. Top 10 Benefits of Scrubbing Your Skin:-

- To Get Clear, Spotless Skin You have clear skin after scrubbing that is free of perspiration, oil, and debris.
- Removes Flakes From Your Skin: Blistered skin is disgusting.
- Aids in the Removal of Dead Cells.
- Enhances Skin's Glow.
- Eliminates Dark Patches.
- Gets Rid of Acne Scars
- Stops ingrown hairs.
- For smooth skin.
- Makes Your Skin Smoother.
- Encourages a Clear Complexion.

C. Choosing Scrub Depending on Skin :-

➤ For Greasy Skin:

People with oily skin frequently battle with acne problems because their skin pores become blocked by extra sebum oil. Thus, a face scrub that not only removes the skin's dead cells but also has anti-pimple properties is necessary. The Salicylic acid's anti-acne abilities are widely known. If you have oily skin, you should get a face cleanser with salicylic acid or other anti-acne ingredients.

➤ For Dry Skin:

Anyone with dry skin can use any facial cleanser that has ingredients meant to eliminate dead skin cells. Glycolic acid is one such chemical that swiftly gets rid of flaky skin and dead skin cells. It is a renowned and effective exfoliator. Look for a face scrub with glycolic acid that hydrates the skin while also improving it.

➤ *For Sensitive Skin:*

Those who have sensitive skin should use greater caution while selecting skincare products. The ideal facial cleanser for sensitive skin is one that is both antibacterial and anti-inflammatory. Propylene glycol possesses both bacterial and fungal resistance. Organic foods with anti-inflammatory effects include yoghurt and turmeric. For sensitive skin, sugar scrubs are regarded as good. With the use of sugar, a natural skin exfoliant, dead skin cells may be readily removed.

➤ *For Combination Skin:*

Because combination skin is a mix of dry and greasy skin, selecting a face scrub may be difficult. However, experts advise those with mixed skin to use a face scrub to eliminate surplus oil without drying out the skin surface⁽¹²⁾.

II. MATERIALS USED

➤ *Rice Flour*^[13]:-



Fig 1 Rice Flour

- **Synonym-** Orzya sativa.
- **Biological source-** It is the seed of the grass species orzya sativa or orzya glaberrima.
- **Family-** Gramineae (Poaceae).
- **Description-**
 - ✓ Colour- It is white, long grained.
 - ✓ Odour- Characteristic.
 - ✓ Taste- Bland.
- **Chief chemical constituents-** Rice is composed of amylose and amylopectin.
- **Uses-** oil- retaining properties, potent skin clearing agent, reduce UV damage, prevent skin aging, Anti-inflammatory agent

➤ *Carrot Powder*:-



Fig 2 Carrot Powder

- **Synonym-** Gajor , Daucus carota sativa.
 - **Biological source-** Carrot paucus carota is a root vegetable, usually orange in colour.
 - **Family-** Apiaceae.
 - **Description-**
 - ✓ Colour- Orange.
 - ✓ Odour – Spring.
 - ✓ Taste- Bitter or soapy
 - **Chief chemical constituents-** carotens, especially alpha and beta carotenes, vit. A and C and dietary fiber. Red carrots contains lycopene.
 - **Uses-** To produce a natural color, reduce inflammation, brighten skin.
- *Amla powder*^{[14]-[15]}:-



Fig 3 Amla Powder

- **Synonym-** Indian Gooseberry, Amalaki, Emblica.
- **Biological source-** It is obtained from dried and fresh fruits of the plant Emblica Officinalis.
- **Family-** Phyllanthaceae.
- **Description-**
 - ✓ Colour- Brown.
 - ✓ Odour- Acidic Astringent.
 - ✓ Taste- Slightly bitter and sour.

- **Chief chemical constituents-** The fruit of amla is rich in vitamin C (ascorbic acid) and contains higher amount of polyphenols.
- **Uses-** Anti-oxidants, helps to reduce dark spots and hyper pigmentation and restore natural glow of skin, eliminates dead skin cells.

➤ *Honey*^[16]:-



Fig 4 Honey

- **Synonym-** Madhu, Honey purified, Madh, Madhvika.
- **Biological source-** Honey is sugary substance deposited in the honeycomb by the bee *Apis mellifera*.
- **Family-** Apidae.
- **Description-**
 - ✓ Colour- Pale Yellow to reddish brown.
 - ✓ Odour- Pleasant and characteristic.
 - ✓ Taste- Sweet, slightly acrid.
- **Chief chemical constituent-** Glucose, fructose, sucrose, dextrin, formic acid, succinic acid, gums.
- **Uses-** Demulcent, antiseptic, antioxidant, vehicle for ayurvedic formulation, anti-inflammatory, topically to treat burns, sweetening agent and promote wound healing.

➤ *Green Tea*^[17]:-



Fig 5 Green Tea

- **Synonym-** *Camellia sinensis*.
- **Biological source-** It contains of leaves of *Camellia sinensis* that have undergone minimal oxidation during processing.
- **Family-** Theaceae.
- **Description-**
 - ✓ Colour- Dark green. Odour- Characteristic.
 - ✓ Taste- Slightly bitter and astringent flavor.
- **Chief chemical constituents-** Phenols, alkaloids, Flavonoids, tannins and steroids. Catechins like epigallocatechin gallate (EGCG), epigallocatechin (EGC), epicatechin-3-gallate and epicatechin (EC).
- **Uses-** To treat flatulence (gas), regulating body temperature and blood sugar, anti-inflammatory properties to reduce skin irritation, skin redness, and swelling.

➤ *Aloe-Vera Gel*^[18]:-



Fig 6 Aloe Vera

- **Synonym-** Aloe; Ghritakumari.
- **Biological source-** Dried juice collected from incision from the bases of the leaves of *Aloe Barbadosis* or *aloe officinalis*.
- **Family-** Liliaceae.
- **Description-**
 - ✓ Colour- The leaves are grey to green.
 - ✓ Odour- Penetrating odour.
 - ✓ Taste- Nauseous and bitter.
- **Chief chemical constituent-** Aloe-emodin is main constituent. It also contains vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids.
- **Uses-** Moisturize skin, treat various skin conditions, including acne, eczema, and sunburn, anti-cancer, anti-oxidant, anti-diabetic.

➤ *Turmeric*^{[19]-[20]-[21]} :-

Fig 7 Turmeric

- **Synonym-** Haldi, Haridra, Curcumin.
- **Biological source-** Turmeric consist of dried as well as fresh rhizomes of the plant *Curcuma longa*.
- **Family-** Zingiberaceae.
- **Description-**
 - ✓ Colour- Brilliant yellow.
 - ✓ Odour- mildly aromatic.
 - ✓ Taste- Pleasantly bitter and earthy.
- **Chief chemical constituents-** Non-volatile curcuminoids and the volatile oil; Curcuminoids contains curcumin, demethoxycurcumin, bisdemethoxycurcumin.
- **Uses-** Anti-septic; traditionally used for disorders of skin; anti-inflammatory; fights freeradical damages.

➤ *Walnut*:-

Fig 8 Walnut

- **Synonym-** Juglance.
- **Biological source-** It is obtained from the edible seed of any tree of the genus *Juglans*, particularly the Persian or English walnut, *Juglans regia*.
- **Family-** Juglandaceae.

• **Description-**

- ✓ Colour- Light brown to dark chocolate with some blonde or yellow as well. Odour- An aromatic smell similar to the smell of citrus lemon-lime soda.
- ✓ Taste- mild, earthy, and a little tangy.
- **Chief chemical constituents-** Monounsaturated fatty acids (Omega 3), arachidonic acid, phyto-chemical substance.
- **Uses-** Exfoliate the skin, Removes dead skin cells, Removes blackheads and whiteheads, Restores freshness, reduce scars, reduce dark spots.

➤ *Coconut Oil*^[22]:-

Fig 9 Coconut Oil

- **Synonym-** Coconut butter, Copra oil.
- **Biological source-** Coconut oil is the oil expressed from the dried solid part of endosperm of coconut, *Cocos nucifera* L.
- **Family-** Palmae.
- **Description-**
 - ✓ Colour- White or pearl white.
 - ✓ Odour- with peculiar coconut odour.
 - ✓ Taste- Bland.
- **Chief chemical constituent-** Mix. of triglyceride of saturated fatty acid, caprylic acid, capric acid, lauric acid myristic acid.
- **Uses-** Nourish dry and cracked skin, replenishing lost moisture and strengthening the skinbarrier to retain it.

➤ *Rose Water*^[23] :-



Fig 10 Rose Water

- **Synonym-** Attar of rose, lavender water, scented liquid.
- **Biological source-** Rose water is obtained from sepals and petals of *Rosa damascena* through steam distillation.
- **Family-** Rosaceae.
- **Description-**
 - ✓ Colour- a light pink-blush color. Odour- exactly like fresh petals.
 - ✓ Taste- Predominantly floral flavor that is not quite savory, and not quite sweet.
- **Chief chemical constituent-** The volatiles mainly consist of 2- phenylehanol, linalool, citronellol, nerol, geraniol, etc.
- **Uses-** Soothes skin irritation, reduce skin redness, heals cuts and scars, treat burns.

➤ *(SLS)*^{[24]-[25]} :-

- **Synonyms-** lauryl sodium sulphate, sodium salt.
- **IUPAC name-** Sodium dodecyl sulphate.
- **Molecular formula-** C₁₂H₂₅NaO₄S.
- **Molecular weight-** 288.38 g/mol.

• **Description-**

- ✓ Colour- White or cream to pale yellow-coloured crystals, flakes, or powder. Odour- Faint odour of fatty substances.
- ✓ Taste- A soapy, bitter taste.
- **Uses-** Anionic emulsifier, as detergent in medicated shampoos, Skin cleanser in topical applications.

➤ *Methyl Paraben*^{[24]-[26]} :-

- **Synonym-** Methyl paraben, Methyl p-hydroxybenzoate, Methyl Para hydroxybenzoate, 4-hydroxybenzoic acid methyl ester.
- **IUPAC name-** Methyl-4-hydroxybenzoate.
- **Molecular formula-** C₈H₈O₃.
- **Molecular weight-** 152.15 g/mol.
- **Description-**
 - ✓ Colour- Colourless crystals or a white crystalline powder.
 - Odour- Odourless.
 - ✓ Taste- A slight burning taste.
- **Uses-** It prevents germ growth, used as preservative.

➤ *Glycerin*^[27] :-

- **Synonym-** Sugar alcohol, polyol, glycerol.
- **IUPAC name-** propane-1,2,3-triol.
- **Molecular formula-** C₃H₈O₃.
- **Molecular weight-** 92.09382 g/mol.
- **Description-** Colour- Colourless. Odour- Odourless.
 - ✓ Taste- Sweet taste and non-toxic.
- **Uses-** Act as moisturizer, as a sweetener in food and beverages, as a solvent.

➤ *Constituents and their Category*

Table 1 Constituents and their Category

| SR. NO. | CONSTITUENTS | QUANTITY | CATEGORY |
|---------|------------------------------|----------|---|
| 1. | Rice Flour | 5 gm | Scrubbing agent |
| 2. | Carrot powder | 1 gm | Anti-aging and Skin whitening |
| 3. | Amla powder | 1 gm | Anti-oxidant |
| 4. | Honey | 0.4 ml | Anti-septic |
| 5. | Green tea | 0.2 gm | Scrubbing agent |
| 6. | Aloe vera | 1 ml | Anti-oxidant, Soothing and cooling action |
| 7. | Turmeric | 0.005 gm | Anti-septic, Anti-bacterial and Anti-inflammatory |
| 8. | Walnut | 1 gm | Moisturizer and Soothes skin |
| 9. | Coconut oil | 0.2 ml | Moisturizer |
| 10. | Rose water | Q.S. | Perfume |
| 11. | Sodium Lauryl Sulphate (SLS) | 0.4 gm | Foaming agent |
| 12. | Methyl paraben | 0.3 ml | Preservative |
| 13. | Glycerin | 1 ml | Emollient |

III. EVALUATION PARAMETERS

➤ Appearance :

- **Colour** - Visual inspection revealed a yellowish brown face scrub.
- **Odour** - sweet and simple syrup like odour is obtained.
- **State** - Semisolid state of scrub.
- **Consistency** - Consistency was found to be smooth with visual observation.
- **pH** - pH was to be 4-6.
- **Spreadability** - It determines the spreadability of the gel on the skin. A small amount of material was placed on a glass slide, followed by another slide placed over them. Amount of weight placed on slide, spread on slide, and time taken for spread are all measured.

It calculated by using formula: $S = \frac{m \cdot L}{t}$

S= spreadability

M=Weight placed on slide (1gm) L=length of glass slide (7.5cm) T=time taken in sec (22sec)

Spreadability was found to be 0.34gm.cm/sec.

- **Homogeneity** – Smooth consistence.
- **Irritability** – Small amount of gel applied on skin and kept for few minutes and found to be non-irritable.
- **Grittiness** – Few gritty particles observed in formulation.
- **Washability**- Small quantity of gel applied on skin and wash with water after few minutes found to be washable with water.

IV. METHOD OF PREPARATION

Weighed carefully all the herbal powders, such as green tea, amla, carrot powder, rice flour, and walnut, sieved through 120, and mixed them together with mortar and pestle to produce a homogenous mixture.

Weighed fuller's earth, turmeric powder, honey, sodium lauryl sulphate, and methyl paraben precisely and triturated them to produce a homogenous mixture. In that combination, add previously made herbal medicine and triturate to get a consistent face scrub drug powder.

In a mortar and pestle, combine coconut oil, glycerin, and aloe vera gel (as a basis), then triturate all of the herbal powder to achieve a paste-like consistency.

Rose water was used to provide aroma.

V. RESULT

- Polyherbal facial scrub was successfully formulated and evaluated.
- The formulation prepared is very effective and having no side effects.
- The result of evaluated parameters are mentioned in following table:

Table 2 The Result of Evaluated Parameters

| SR. NO. | PARAMETER | RESULT |
|---------|---------------|------------------------------|
| 1. | Colour | Yellowish brown |
| 2. | Odour | Maple syrup like, sweet |
| 3. | State | Semisolid |
| 4. | Consistency | Smooth |
| 5. | pH | 4-6 |
| 6. | Spreadability | Uniform |
| 7. | Homogeneity | Smooth consistence |
| 8. | Irritability | Non-irritant |
| 9. | Grittiness | Small gritty particles |
| 10 | Foamability | Foam volume 85 ml at 5minute |
| 11. | Washability | Easily washable |

VI. CONCLUSION

In the current study, a herbal face scrub was developed and tested for several evaluation parameter. The results shown that the formulation complies the tests. The formulation was discovered to be suitable for application on the skin in order to make it healthy and brighten it without causing any negative effects. Natural and herbal cosmetics are simpler, safer, and more effective to use than other cosmeceutics on the market. The fact that herbal treatments can be used on all skin type is one of their primary selling points. Effectiveness and healthier skin type are provided by polyherbal face scrub. The antioxidant, antiseptic, antiaging effect of rice flour, amla, turmeric, walnut, green tea, carrot

powder and aloe vera enhance the importance of use of polyherbal face scrub.

REFERENCES

- [1]. Prathyusha, J., et al. "Formulation and Evaluation of Polyherbal Face Scrubber for Oily Skin in Gel Form." *International Journal of Pharmaceutical Sciences and Drug Research*, vol. 11, no. 04, 2019, doi:10.25004/ijpsdr.2019.110404.
- [2]. Debbarma, D., et al. "Clinical Review of Deep Cleansing Apricot Scrub: An Herbal Formulation." *International Journal of Bioassay*, vol. 4, no. 9, 2015, pp. 4251–4253.

- [3]. Ashawat, M. S., et al. "Herbal Cosmetics: Trends in Skin Care Formulation." *Pharmacognosy Review*, vol. 3, no. 5, 2009, pp. 82–89.
- [4]. Ghode, S. P., et al. "Formulation and Evaluation of Facial Scrub Containing Sunflower Seeds and Other Natural Ingredients." *World Journal of Pharmaceutical Research*, vol. 8, no. 9, 2019, pp. 1772–1781.
- [5]. Daud, F. S., et al. "A Study of Antibacterial Effect of Some Selected Essential Oils and Medicinal Herbs against Acne Causing Bacteria." *International Journal of Pharmaceutical Science Invention*, vol. 2, no. 1, 2013, pp. 27–34.
- [6]. Nguyen, Tam. "Dermatology Procedures: Microdermabrasion and Chemical Peels." *FP Essentials*, vol. 426, 2014, pp. 16–23.
- [7]. Garg, A., et al. "Spreading of Semisolid Formulation." *Pharm Tech*, vol. 9, 2002, pp.89–105.
- [8]. Mahajan, Shraddha, et al. "Formulation and Evaluation of Herbo-Mineral Facial Scrub." *Journal of Drug Delivery and Therapeutics*, vol. 10, no. 3, 2020, pp. 195–197,doi:10.22270/jddt.v10i3.4039.
- [9]. Ghode, D. S., et al. "Formulation And Evaluation Of Facial Scrub Containing Sunflower Seeds And Other Natural Ingredients." *World Journal of Pharmaceutical Research*, vol. 8, no. 9, 2019, pp. 1772–1781.
- [10]. Somwanshi SB, Kudale KS, Dolas RT, Kotade KB. www.ijrap.Net
- [11]. Talpekar, P., and M. Borikar. "Formulation, Development and Comparative Study of Facial Scrub Using Synthetic and Natural Exfoliant." *Research Journal of Topical andCosmetic Sciences*, vol. 7, no. 1, 2016, pp. 1–8.
- [12]. "Review on Polyherbal Facial Scrub." *International Journal of Creative Research Thoughts*, vol. 10, no. 1, 2022, pp. 29–30.
- [13]. Shahinoor Rahman Dulal. "MohammadAbu Taher2and Hasib Sheikh Sandalwood Oil Can Be a Miraculous Tackle on Skin Aging." *Skin Appearance and Wrinkle Skin -a Review*, vol. 19, 2018.
- [14]. Gopinath, Hima, and Kaliaperumal Karthikeyan. "Turmeric : A Condiment ,Cosmetic and Cure." *Indian Journal of Dermatology*, vol. 84, 2018, pp. 16–21.
- [15]. Ahmad, Wasim, et al. "Curcuma Longa Linn - A Review." *Hippocratic Journal ofUnani Medicine*, vol. 5, no. 4, 2010, pp. 179–190.
- [16]. Priyanka, R., et al. "Turmeric as Medicinal Plant for the Treatment of Vulgaris." *Pharma Tutor*, vol. 5, no. 4, 2017, pp. 19–27.
- [17]. Sindhu, R. K., and S. Arora. "Sandalwood Oil: Phytochemical and Pharmacological Updates." *Recent Progress in Medical Plants*, vol. 1, 2013, pp. 181–191.
- [18]. Shahtalebi, Mohammad-Ali. Amir-Hosein Siadat, Setare Karbasizade3* Preparation and Evaluation of the Clinical Efficacy and Safety of Tomato Lotion Containing Lycopene. 2015.
- [19]. Sakshi Ecavade: 21 Mind -Blowing Benefits of Fenugreek Seeds for Skin, Hair andHealth. 2022.
- [20]. Mapsofindia.com, <https://www.mapsofindia.com/my-india/india/21-mind-blowing-benefits-of-fenugreek-seeds-for-skin-hair-and-health>. Accessed 18 May 2023.
- [21]. Kate MacDonnell : 9 Coffee Benefits for Skin & Hair, Feb 25,2022
- [22]. Gowthamarajan K Giriraj Kulkarni T,Muthukumar A,Mahadevan N,Samanta M K and Suresh B : Evaluation of Fenugreek Mucilage As Gelling Agent, *International Journal of Pharma Excip* 2002.
- [23]. Mane, P. "K : Formulation and Evaluation Of Peel-Off Gel Formulation Containing Fenugreek." *Pharmaceutical Resonance*, vol. 3, no. 2, 2021.
- [24]. Raymond, C., et al. "Handbook of Pharmaceutical Excipients." *Pharmaceutical Press*,vol. 6, 2009.
- [25]. Nandal, Urvashi, and Raju Lal Bhardwaj. "Aloe Vera for Human Nutrition, Health and Cosmetic Use-A Review." *International Research Journal of Plant Sciences*, vol.3,no. 3, 2012, pp. 38–46.
- [26]. Talreja, Shreya, et al. "Prateek Srivastava and Swarnima Pandey: A Complete Pharmacognostic Review On Amla." *A Complete Pharmacognostic Review On Amla, World Journal Of Pharmacy And Pharmaceutical Sciences*, vol. 8, no. 4, 2019,pp. 622–637.
- [27]. Ediriweera, E. R. H. S., and N. Y. Premarathna. "Medicinal and Cosmetic Uses ofBees Honey-A Review." *AYU*, vol. 33, no. 2, 2012, pp. 178–182.