

**A RESEARCH ON FORMULATION AND EVALUATION OF HERBAL WALNUT  
SHELL FACE SCRUB****Bharti<sup>1\*</sup>, Mahak Tamanna<sup>1</sup>, Saklain Ansari<sup>1</sup> and Pooja Negi<sup>2</sup>**<sup>1</sup>Students, Maya College of Pharmacy, Dehradun.<sup>2</sup>Assistant Professor School of Pharmacy, Maya Devi University, Dehradun.**\*Corresponding Author: Bharti**

Students, Maya College of Pharmacy, Dehradun.

Article Received on 27/04/2025

Article Revised on 17/05/2025

Article Accepted on 07/06/2025

**ABSTRACT**

This study focuses on the formulation and evaluation of a herbal facial scrub using natural ingredients known for their skin-beneficial properties. The scrub is made from a blend of walnut shell powder, rice flour, beetroot extract, aloe vera gel, blue-mink flower, honey, kaolin clay, glycerin, and Vitamin E. These ingredients are selected for their exfoliating, moisturizing, and skin-rejuvenating effects. The formulation process includes carefully measuring and mixing the ingredients to achieve a smooth, consistent, and effective scrub. Various evaluation tests are conducted, including sensory analysis (Appearance, Texture, Odor), pH testing, viscosity measurement, spread ability, washability, and microbial load tests. The scrub's effectiveness in exfoliating dead skin cells and improving skin texture is assessed, along with its safety, ensuring it is non-irritating and suitable for sensitive skin types. The results indicate that the formulated herbal facial scrub meets the required standards for a safe, effective, and natural skincare product. The use of natural exfoliants and moisturizing agents ensures that the scrub provides both deep cleansing and hydration, offering a gentle yet effective solution for skin rejuvenation.

**KEYWORDS:** Herbal face scrub, Exfoliating agents, Herbal scrub, Antioxidants properties, Walnut shell powder.**INTRODUCTION**

Herbal face scrubs are skincare products that are designed to exfoliate and rejuvenate the skin on the face using natural and organic ingredients. Unlike synthetic scrubs, which can contain harsh chemicals that can damage the skin, herbal face scrubs are made from plant-based ingredients that are gentle and nourishing. Products meant to be applied to the human body by rubbing, sprinkling, pouring, or spraying are considered cosmetic products. They are used for cleaning, enhancing attractiveness, beautifying, or changing appearance. Cosmetics are widely available in creams, lotions, serums, scrubs, and face packs to produce their subsequent effect on the applied area. Cosmetics are also developed to act against acne, reduce wrinkles, control oil secretion, impart glow to skin, and for many other purposes. These cosmetics have diverse properties, such as antiseptic, emollient, anti-inflammatory, antioxidant, anti-keratolytic, anti-drying, and antibacterial.<sup>[1]</sup> Natural exfoliants like sugar or salt are often combined with finely crushed herbs like chamomile, lavender, and rose in herbal face scrubs. Together, these components gently exfoliate dead skin cells and clear clogged pores, giving the skin a smoother, more radiant appearance. Depending on the particular components used, herbal face scrubs can offer a number of additional advantages in addition

to exfoliating the skin. Certain herbal face washes, for instance, could have antioxidant-rich substances that help shield the skin from environmental stressors and lessen the appearance of aging. Other herbal face washes are perfect for people with sensitive or acne-prone skin because they may contain relaxing and soothing components.<sup>[2,3]</sup> All things considered, herbal face scrubs provide an all-natural and efficient method of taking care of your face's skin, leaving it feeling and looking renewed and healthy.

**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:

- A. Physical exfoliants and
- B. Chemical exfoliants.

**Physical exfoliants**

Physical exfoliants work by physically scrubbing away dead skin cells using abrasive particles or tools. Some common physical exfoliants include:<sup>[4,5]</sup>

1. Sugar or salt scrubs
2. Ground coffee or rice
3. Facial brushes or sponges

4. Microbeads (Although these are now banned in many countries due to environmental concerns)

#### 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:

1. Alpha-hydroxy acids (AHAs) such as glycolic acid and lactic acid
2. Beta-hydroxy acids (BHAs) such as salicylic acid
3. Enzymes such as papain (Found in papaya) and bromelain (Found in pineapple).<sup>[6,7]</sup>

Exfoliants that are chemical or physical can both be useful in encouraging cell renewal and eliminating dead skin cells. Nonetheless, it's crucial to use exfoliants appropriately and sparingly to prevent over-exfoliation, which can irritate and harm the skin. Because certain exfoliants can be too harsh for delicate skin or worsen specific skin disorders like acne, it's crucial to pick one that is appropriate for your skin type and concerns.

#### Properties of exfoliants

Exfoliants are products that are intended to rid the skin of impurities and dead skin cells, leaving it smoother and more radiant. Exfoliants' optimal qualities vary depending on the kind and skin type they are meant for, but generally speaking, the following are some important characteristics to search for:

1. **Effective:** - The perfect exfoliator should be able to remove impurities and dead skin cells without being overly abrasive or unpleasant. Without harming the skin, it ought to produce obvious effects.<sup>[8]</sup>
2. **Gentle:** - Exfoliation is crucial for keeping skin healthy, but it shouldn't be done too harshly as this can irritate, inflame, and even harm the skin. Thus,

the perfect exfoliator should be mild enough to not hurt anyone.<sup>[9]</sup>

3. **Safe:** - The perfect exfoliant should be safe to use and free of dangerous substances. It should be free from synthetic fragrances, preservatives, and other potentially harmful chemicals.<sup>[10-11]</sup>
4. **Hydrating:** An excellent exfoliator should be hydrating and moisturizing in order to offset any dryness and leave the skin feeling smooth and supple, as exfoliation can occasionally leave the skin feeling dry and dehydrated.<sup>[12]</sup>
5. **Non-comedogenic:** The best exfoliants are non-comedogenic, which means they shouldn't clog pores or result in acne. All skin types, including sensitive and acne-prone skin, should be able to use it.<sup>[13]</sup>
6. **Natural:** To reduce its negative effects on the environment and maximize its advantages for the skin, the perfect exfoliator should be composed of natural, organic, or sustainable substances.<sup>[14]</sup>
7. **Customizable:** An ideal exfoliant should be customizable, to suit individual skin types and concerns. It should be available in different formulations, strengths, and textures, to provide a personalized experience and optimal results.<sup>[15]</sup>

#### MATERIALS AND METHODOLOGY

##### Ingredients

1. **Walnut shell powder:** - It is a common ingredient in herbal face scrubs because it has exfoliating properties that can help remove dead skin cells and impurities from the skin's surface.



Figure 1: - Walnut shell powder.

2. **Rice flour:** - It is a natural exfoliant that can help to remove dead skin cells and impurities from the surface of your skin. It contains a variety of nutrients

that are beneficial for the skin, including antioxidants, vitamins, and minerals.<sup>[16]</sup>

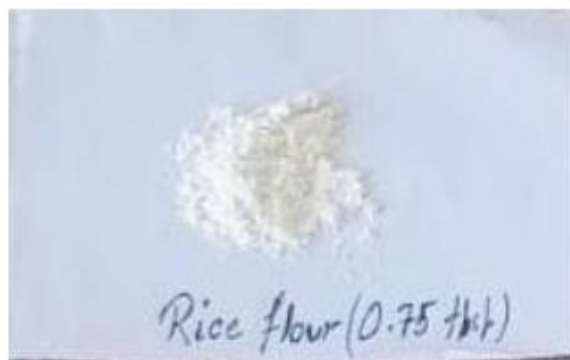


Figure 2: - Rice flour.

3. **Beetroot juice extract:** - Beetroot is a deep red root vegetable rich in essential nutrients like vitamins A, C, and E, antioxidants, iron, and folate. It has natural

anti-inflammatory and skin-brightening properties, which make it beneficial for skincare



Figure 3: - Beetroot juice extract.

4. **Aloe vera Extract (*Aloe barbadensis miller*):** - Vitamins C and E, as well as the anti-aging compound beta-carotene, are abundant in aloe vera

gel. It also has antibacterial and anti-inflammatory qualities and helps to lessen the visibility of wrinkles and age spots.<sup>[17]</sup>



Figure 4: - Aloe vera tree.

Figure 5: - Aloe vera juice.

5. **Bluemink flower (*Ageratum houstonianum*):** - Blue-mink flower (*Ageratum houstonianum*) is a soft, fluffy-looking plant with vibrant blue to purple

blossoms. It is known for its soothing, anti-inflammatory, and antibacterial properties, making it useful in natural skincare formulations.



**Figure 6: - Bluemink flower.**



**Figure 7: - Bluemink flower powder.**

6. **Honey:** - Honey is a natural sweet substance produced by bees from flower nectar. It is well-known for its moisturizing, antibacterial, and healing

properties, making it a valuable ingredient in skincare products.



**Figure 8: - Honey.**

7. **Vitamin E Capsule:** - Vitamin E is a fat-soluble antioxidant commonly found in capsule form (often labeled as "Evion" capsules). It plays a key role in

maintaining healthy skin by protecting it from damage and supporting repair.<sup>[18]</sup>



**Figure 9: - Vitamin E Capsule.**

8. **Kaolin:** - Kaolin, also known as white clay, is a soft, natural clay mineral rich in silica. It is one of the

gentlest clays used in skincare and is well-suited for all skin types, especially sensitive and oily skin.



Figure 10: - Kaolin powder.

9. **Glycerin:** - The skin feels less dry, stays more hydrated, retains moisture better, and looks younger because to glycerin's humectant properties. In

addition to being a skin emollient, glycerin softens the skin and soothes dry, rough areas caused by psoriasis and eczema.<sup>[19]</sup>



Figure 11: - Glycerin.

#### Formulation of tablets

Compressed into tablets, the herbal powder and Extract was combined. The table provides the composition's specifics. **No - 1.**

Table 1: Formulation of herbal face scrub.

Ingredients	Quantity for 50g Batch
Walnut shell powder	5
Rice flour	5
Beetroot juice Extract	5
Aloe vera Extract ( <i>Aloe barbadensis miller.</i> )	15
Blue-mink flower ( <i>Ageratum houstonianum</i> )	5
Honey	7.5
Vitamin E Capsule	1
Kaolin	10
Glycerin	2.5



Figure 12: - Ingredient for preparation of herbal walnut shell face scrub.

#### METHOD OF PREPERATION

- Dry mixing:** - To clean & dry then add **walnut shell powder, rice flour, and kaolin**. Then mix well to form a uniform powder base.
- Liquid base preparation:** - To separate and take **aloe vera gel, glycerin, and honey**. and stirring gently until to form a smooth and even gel-like mixture.
- Add beetroot extract:** - To mix **beetroot juice extract** into the liquid base. and stirring well until the color is evenly distributed.
- Add vitamin e:** - To cut and open the **Vitamin E capsule** and compress the contents into the mixture. Then xix thoroughly to blend the antioxidant into the scrub.
- Incorporate blue-mink extract:** - Add **blue-mink flower extract** (liquid or powdered form) to the mixture. and stirring gently to ensure it is an evenly mixed.
- Combine Powder and Liquid Base:** - Gradually add the dry powder mixture to the liquid base while stirring continuously. Then mix until a smooth, semi-thick scrub-like consistency is achieved.
- Final mixing:** - To ensure the final product is free from lumps and well blended. Then adjust consistency with a small amount of **rose water** or **aloe vera juice** if needed.
- Packaging:** - To transfer the scrub into a clean, airtight jar or container. and label and store in a cool, dry place.

#### Parameter and Evaluation

##### 1. Organoleptic evaluation

- Color: Brown
- Odor: pleasant smell or Natural.
- Feel on skin: Spread ability and Smoothness.

**2. pH determination:** - A digital pH meter was used to measure the scrub's pH. Its Determines the scrub's acidity or alkalinity. It is pH of 4.5 to 6.5 is ideal for skin friendly conditions.<sup>[20]</sup>

**3. Washability test:** - To evaluate the scrub's efficacy, the skin was scrubbed for a few minutes before being rinsed with water. The formulation was found to be water-washable.<sup>[21]</sup>

**4. Grittiness/Particle Size:** - This test primarily checks for gritty particles in the formulation by applying the scrub to the skin.<sup>[22]</sup>

**5. Spread ability test:** - The two glass slides were taken, and one was cleaned. 20g of weight was then added to a second glass slide that had been placed over the scrub. The amount of ground that the brush covered and the time it took to spread were measured. The algorithm below was used to calculate spread ability.<sup>[23]</sup>

$$S = M \times \frac{L}{T}$$

**where,** S = Spread ability m = Weight placed on the slide

l= Length of glass slide

t = Time taken in seconds

**6. Stability test:** - The stability of the formulation can be evaluated by filling plastic containers with the scrub and putting them in a humidity chamber set at 45°C and 75% relative humidity. The stability of the

formulation can be assessed for three months, one month at a time.<sup>[24,25]</sup>

7. **Irritancy test (Patch test):** - It is a performed on a little patch of skin to look for redness or an allergic reaction. And verifies that the scrub is safe to apply to the skin.<sup>[26,27]</sup>
8. **Viscosity test:** - It is a uses a viscometer to measure the thickness or flow characteristic. And assures a consistent and workable scrub.<sup>[28,29]</sup>

### Why the herbal scrub?

Herbal medicines have been used for a longer period of time and are more often accepted and well-received by patients. For the world's expanding population, medicinal plants are the only reliable source of costly medications

because of their renewable supply. It's safe to use a herbal face scrub, and it exfoliates your skin, making it look more polished and cared for. Because natural materials are completely safe to use and have no negative effects, you can purchase face scrubs made with them rather than chemicals. To exfoliate your skin, however, you must avoid using a face scrub every day. The cause of this is the potential for cell damage from regular exfoliation with scrubs, which can lead to rough skin. Therefore, you should know how to use it and what not to use. Using a herbal face scrub as part of an exfoliation technique will help your skin produce more collagen. Your skin will look smoother and more radiant as a result. Additionally, you can avoid skin outbreaks by using a herbal face scrub. To protect your skin from possibly harmful chemicals, it is best to use herbal face scrubs instead of chemical ones.

## RESULTS AND DISCUSSIONS

Table 2: Evaluation of face scrub.

Sr. No	Parameters	Observation
1	Colour	Brown
2	Odour	Pleasant smell
3	Consistency	Good
4	Spread ability	Easily Spreadable
5	pH	6.8
6	Grittiness	Small gritty particles
7	Washability	Easily washable
8	Viscosity	Semi-solid

## CONCLUSION

In conclusion, the herbal face scrub has shown to be a safe and efficient skincare product. It is made from natural materials such as rice flour, beetroot extract, aloe vera gel, blue-mink flower, honey, kaolin clay, glycerin, vitamin E, and walnut shell powder. It works well to exfoliate, hydrate, and rejuvenate the skin. The tests carried out, including pH, viscosity, spread ability, and microbial safety, confirm that the scrub is safe for use and meets all necessary cosmetic product standards. The scrub does an excellent job of removing dead skin cells without causing any irritation and provides moisture to the skin using natural ingredients like glycerin and honey. Due to its careful balancing to suit various skin types, the formulation is a gentle and efficient approach to cleanse the skin. This scrub is a safe, natural alternative to chemical scrubs. It also helps brighten the complexion and improve skin texture. The results show that this scrub has great potential in the cosmetics industry, especially for people looking for natural skincare options.

## REFERENCE

1. Mane L, Chandakavathe BN, Bhosale DS. Formulation and Evaluation of Herbal Scrub Gel of Walnut Shell. EPRA Int. Multidiscip. Res. J, 2022; 8(6): 101-104.
2. Kokate C.K., Purohit A.P., Gokhale S.B., "Pharmacognosy" Nirali Prakashan, 52: 19.1-19.2, 14.21, 14.91, and 14.132.
3. Parashar Bharat, Sharma Pankaj, Kabra Atul, Sharma Pankaj. Formulation and evaluation of polyherbal face cream. International pharmaceutical sciencia| july September, 2013; 3: 3.
4. Mukherjee, P. K., et al. Cosmeceuticals: An Emerging Concept. Indian Journal of Pharmacology, 2011; 43(4): 239-245.
5. Kim, S., & Shin, M. Environmental concerns about microbeads in cosmetics and their alternatives. Environmental Science and Pollution Research, 2020; 27(22): 28016–28024.
6. S. S. Londhe, M. G. Bhosale, Dr. A. A Joshi, Geeta Sapkale. Formulation and Evaluation of Polyherbal Facial Scrub. International Journal for Scientific Research & Development|, 2020; 7: 11. | ISSN (online): 2321-0613.
7. J. Prathyusha, N. S. Yamani, G. Santhosh, A. Aravind, B. Naresh. Formulation and Evaluation of Polyherbal Face Scrubber for Oily Skin in Gel Form. International Journal of Pharmaceutical Sciences and Drug Research, 2019; 11(4): 126-128.
8. Mukherjee, P. K., Maity, N., Nema, N. K., & Sarkar, B. K. Cosmeceuticals: An Emerging Concept. Indian Journal of Pharmacology, 2011; 43(4): 239–245
9. Draelos, Z. D. Skin care ingredients and cosmetics formulation. In Dermatologic Clinics, 2020; 38(4): 443-456.
10. Mukherjee, P. K., Maity, N., Nema, N. K., & Sarkar, B. K. Cosmeceuticals: An Emerging Concept.

- Indian Journal of Pharmacology, 2011; 43(4): 239–245.
11. Draelos, Z. D. Natural ingredients in cosmetics: Benefits and challenges. *Dermatologic Clinics*, 2020; 38(4): 443-456.
  12. Zasada, M., Budzisz, E., & Rotsztein, H. Natural Ingredients in the Treatment of Acne Vulgaris. *Journal of Clinical Medicine*, 2019; 8(11): 1976.
  13. Draelos, Z. D. Cosmeceuticals: What are they *Dermatologic Clinics*, 2013; 31(4): 561-566.
  14. Berson, D., & Kaufman, J. Noncomedogenic Skin Care Products. *Dermatologic Clinics*, 2017; 35(3): 247-255.
  15. Pal, A., & Shukla, Y. Herbal Medicine: Current Status and the Future. *Asian Pacific Journal of Cancer Prevention*, 2003; 4(4): 281-288.
  16. Pandey Shivanand, Meshya Nilam, D. Viral, Herbs Play an Important Role in the Field of Cosmetics, *International Journal of Pharm Tech Research*, 2010; 2(1): 632- 639.
  17. Draelos ZD, Botanical antioxidants, *Cosmetic Dermatol*, 2003; 16(10): 41-42.
  18. Homemade Facial Scrub: 8 DIY Recipes for Healthier Skin
  19. [Premiumarticles.biz/beauty/why-should-you-use-face-scrubs-and-not-chemical-scrubs/](https://premiumarticles.biz/beauty/why-should-you-use-face-scrubs-and-not-chemical-scrubs/)
  20. Kaushik, A., & Kaur, P. Formulation and Evaluation of Herbal Facial Scrub Using Natural Ingredients. *Journal of Cosmetic Science*, 2023; 74(2): 101-110.
  21. Prasad, S., & Singh, N. Physicochemical and Stability Evaluation of Herbal Face Scrub. *International Journal of Pharmaceutical Sciences and Research*, 2021; 12(5): 2684-2690. [https://doi.org/10.13040/IJPSR.0975-8232.12\(5\).2684-90](https://doi.org/10.13040/IJPSR.0975-8232.12(5).2684-90)
  22. Shinde, S. D., & Patil, R. Development and Evaluation of Herbal Facial Scrub Containing Walnut Shell Powder. *Journal of Drug Delivery and Therapeutics*, 2020; 10(1): 47-54.
  23. Harish, S., & Ramesh, S. Standardization and Evaluation of Herbal Face Scrub Formulation. *Asian Journal of Pharmaceutical and Clinical Research*, 2022; 15(4): 121-126.
  24. Sultana, N., & Rashid, N. Evaluation of Physicochemical Properties of Herbal Cosmetics. *International Journal of Pharmacy and Pharmaceutical Sciences*, 2023; 15(3): 57-62.
  25. Sharma, V., & Singh, R. Stability Studies and Patch Test of Herbal Face Scrub. *International Journal of Cosmetic Science and Applications*, 2021; 13(2): 88-95.
  26. Kumar, P., & Jain, A. Formulation and Evaluation of Natural Face Scrub Using Rice Flour and Aloe Vera. *Journal of Herbal Medicine*, 2020; 28: 100421.
  27. Gupta, S., & Verma, A. Physicochemical and Sensory Evaluation of Herbal Cosmetic Formulations. *Journal of Applied Pharmaceutical Science*, 2021; 11(7): 50-56.
  28. Deshmukh, R. R., & Patil, V. Quality Control and Stability Studies of Herbal Facial Scrub. *International Journal of Herbal Medicine*, 2022; 10(1): 35-40.
  29. Patel, D., & Shah, S. Viscosity and Spreadability Analysis of Herbal Scrub Containing Natural Exfoliants. *International Journal of Cosmetic Science*, 2023; 45(1): 17-23.