



ISSN: 2231-3656

International Journal of Pharmacy and Industrial Research (IJPIR)

JPIR | Vol.16 | Issue 2 | Apr - Jun-2026

www.ijpir.com

DOI: <https://doi.org/10.61096/ijpir.v16.iss2.2026.563-571>

Formulation and Evaluation of Walnut Shell Powder-Based Herbal Face Scrub Soap

Dr. Archana S. Murgunde^{*1}, Shraddha Devappa Bandagi², Anjum Shabbir Patel³, Omkar V. Chavan⁴, Avadhut A. Mane⁵, Pranali Laxman Sakate⁶, Dr. Vikas R. Dhole⁷, Dr. Shreenivas K. Mohite⁸

^{1,2,3,4,5,6,8} Rajarambapu College of Pharmacy, Kasegaon

⁷ Ashokrao Mane College of Pharmacy, Peth Vadgaon.

*Corresponding Author: Archana S. Murgunde

Email id: dholearchanarcp@gmail.com



Published by:
06.06.2026

Futuristic Publications
2026| All rights reserved.



Creative Commons
Attribution 4.0
International License.

Abstract:

This study focuses on the formulation and evaluation of a walnut shell powder-based herbal facial scrub using natural ingredients. Plant-based cosmetics are becoming increasingly popular, because they are safer, more effective, and have fewer side effects than synthetic products. The aim of this research was to develop a multifunctional herbal scrub soap that cleanses, exfoliates and nourishes the skin.

The formulation was prepared using a glycerin soap base along with herbal ingredients such as neem, tulsi, orange peel powder, red lentil powder, and walnut shell powder as a natural exfoliating agent. Aloe vera gel and vitamin E were incorporated to enhance moisturizing and antioxidant properties, while fragrance was added to improve sensory appeal. The prepared soap was evaluated for several physicochemical parameters such as sensory properties, pH, foam height, foam retention, flammability, cleansing properties, viscosity, and roughness.

The results indicated that the formulated soap possessed good physical appearance, pleasant odor, and acceptable pH suitable for skin application. It showed good foaming ability, stability, and cleansing efficiency. The presence of walnut shell powder provided effective exfoliation without causing irritation, while other herbal ingredients contributed antimicrobial, soothing, and skin-enhancing properties.

In conclusion, the developed herbal face scrub soap was found to be safe, effective, and suitable for regular use. It can serve as a natural and eco-friendly alternative to commercially available synthetic scrub soaps. Further studies on stability and microbial analysis are recommended to enhance its commercial applicability.

Keywords: Herbal Scrub Soap, Walnut Shell Powder, Natural Exfoliant, Herbal cosmetics.

1. INTRODUCTION

The word "cosmetics" originates from the Greek word "KosmTikos," meaning "possessing the ability to organize and adorn." Cosmetics refer to products designed to cleanse, beautify, enhance attractiveness, or alter the appearance and texture of the face and body. Ayurvedic cosmetics, often termed herbal cosmetics, utilize natural plant-based ingredients with long histories in traditional medicine to enhance skin health. Since ancient times, various ingredients have been used to make the skin clean and beautiful.

An essential component of any skin care regimen is facial washes. Additionally, a facial scrub keeps the skin on the neck smooth and facilitates exfoliation. For all skin types, a face scrub is a great thorough cleaning and exfoliating treatment that works particularly well for oily skin.

Herbal soap is a medication with antifungal and antibacterial components. It is primarily made from various parts of a plant, such as leaves, stems, roots, and fruits, and is used to strengthen the body and, treat wounds or diseases.

A natural skin care product, Herbal Scrub Soap uses botanical ingredients to wash, nurture, and refresh the skin. Herbal face soaps are frequently created from plant-based extracts, aromatic oils, and other natural substances recognized for their advantageous qualities, whereas regular soaps could contain harsh chemicals or artificial smells. Herbal scrub soaps are natural skincare products that utilize the power of plant-based ingredients to cleanse, nourish, and revitalize the skin. While traditional soaps may contain harsh chemicals or artificial fragrances, herbal cleansing soaps are typically made with plant extracts, aromatic essential oils, and other natural ingredients known for their benefits. Herbal face soaps typically contain a blend of herbs, plant extracts, and aromatic oils selected for their skin benefits. Herbal cleansing soaps gently and effectively cleanse the skin, removing dirt, excess oil, and impurities without stripping it of its natural moisture. They are suitable for all skin types, including sensitive and acne-prone skin. Many herbal face soaps are formulated to hydrate and moisturize the skin in addition to cleansing it.

In addition to their skin care benefits, the essential oils in herbal face soaps often provide aromatherapy benefits. These natural scents help to improve mood, promote relaxation, and enhance the overall sensory experience of using the soap. Many herbal face soaps are made using sustainable and eco-friendly methods, which reduces their impact on the environment. Their packaging may be made from recyclable materials and they are free of harsh chemicals that can harm the environment.

The use scrub soap directly on your skin. Gently massaging while using scrubbing soap is advised because it enhances blood circulation and increases the amount of oxygen that reaches the full surface of the skin. Many people have issues like uneven skin tone and pigmentation as a result of specific environmental conditions. Scrubbing soap, which has components that improve the skin's cleanliness, softness, hydration, and brightness, is the solution to this issue. The primary active constituents in this mixture are red dal powder, neem, and tuls. In addition, the mixture contains a glycerin matrix, almond oil, rose water, aloe vera, turmeric, and vitamin E.

2. MATERIALS AND METHODS

2.1. Glycerin Soap Base

Synonyms: Glycerol soap base, transparent soap base.

Biological Source: Derived from plant oils (coconut, palm) or animal fats.

Chemical Constituents: Glycerin, fatty acid salts (sodium stearate), water, sorbitol.

Part Used: Whole base

Role: Soap base, moisturizer.

Uses: Provides cleansing, hydration, and transparency to soap.



Fig no.1 - Glycerin soap base

2.2. Neem Powder

Synonyms: Margosa powder

Biological Source: Leaves of Azadirachta Indica.

Family: Meliaceae.

Chemical Constituents: Azadirachtin, Nimbin, Nimbidin, flavonoids

Part Used: Leaves

Role: Antibacterial, antifungal.

Uses: Treats acne, skin infections, improves skin health



Fig no.2 -Neem Powder

2.3. Tulsi Powder

Synonyms: Holy basil powder

Biological Source: Leaves of *Ocimum Tenuiflorum*

Family: Lamiaceae

Chemical Constituents: Eugenol, Ursolic acid, Rosmarinic acid

Part Used: Leaves

Role: Antioxidant, antimicrobial

Uses: Purifies skin, reduces inflammation.



Fig no.3 - Tulsi Powder

2.4. Orange Peel Powder

Synonyms: Citrus peel powder

Biological Source: Peel of *Citrus Sinensis*

Family: Rutaceae

Chemical Constituents: Vitamin C, limonene, flavonoid

Part Used: Fruit peel

Role: Natural exfoliant, skin brightener

Uses: Removes dead skin, improves complexion.



Fig. no.4 - Orange peel powder

2.5. Red Lentils Powder

Synonyms: Masoor dal powder

Biological Source: Seeds of *Lens culinaris*

Family: Fabaceae

Chemical Constituents: Proteins, carbohydrates, polyphenols

Part Used: Seeds

Role: Mild exfoliant, cleanser

Uses: Removes dirt, smoothens skin



Fig no. 5 - Red Lentils Powder

2.6. Walnut Shell Powder

Synonyms: Walnut exfoliant powder

Biological Source: Shell of *Juglans regia*

Family: Juglandaceae

Chemical Constituents: Lignin, cellulose, phenolics

Part Used: Hard shell

Role: Physical exfoliant

Uses: Removes dead skin cells, improves texture



Fig no.6 - Walnut shell powder

2.7. Aloe Vera Gel

Synonyms: Aloe gel

Biological Source: Leaves of *Aloe vera*

Family: Asphodelaceae

Chemical Constituents: Aloin, aloe-emodin, polysaccharides, vitamins

Part Used: Leaf pulp (gel)

Role: Moisturizer, soothing agent

Uses: Hydrates skin, heals irritation



Fig no.7 - Aloe vera gel

2.8. Vitamin E

Synonyms: Tocopherol

Biological Source: Plant oils (wheat germ, sunflower oil)

Chemical Constituents: Alpha-tocopherol

Part Used: Extracted oil

Role: Antioxidant, preservative

Uses: Protects skin from damage, increases shelf life



Fig no.8 - Vitamin E

2.9. Pears Herbal Fragrance

Synonyms: Fragrance oil, perfume

Biological Source: Synthetic or plant-derived aromatic compounds

Chemical Constituents: Essential oils, aromatic esters, alcohols

Part Used: Whole fragrance blend

Role: Provides scent

Uses: Enhances user experience and product appeal



Fig no.9 - Pears Herbal Fragrance

2.10. Formulation Table

Table no.1: Formulation Table

Sr. No.	Ingredients	Role of Ingredient
1	Neem Powder Extract	Antibacterial, antiacne

2	Tulsi Powder Extract	Antiseptic and soothing agent
3	Orange Peel Powder Extract	Skin brightening, mild exfoliation
4	Red Lentils Powder Extract	Gentle exfoliant
5	Walnut Shell Powder	Scrubbing agent
6	Aloevera Gel	Moisturizing and soothing agent
7	Vitamin E	Antioxidant
8	Glycerin Soap Base	Main Base, humectant
9	Pears Herbal Fragrance Oil	Fragrance

2.11. Procedure

2.11.1. Preparation of soap base

Take 10gm glycerin soap base in clean beaker. Heat gently using water bath (40-50 degree Celsius is enough). Stir until it become semi-solid

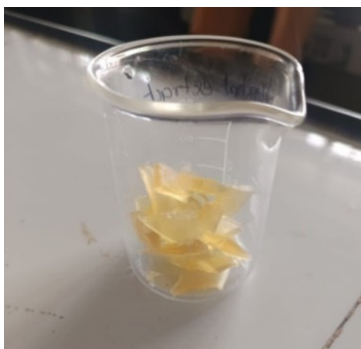


Fig no. 10: Soap Base

2.11.2. Add liquid ingredients

Add aloe vera gel and vitamin E. mix slowly to avoid air bubbles.

2.11.3. Add herbal extracts

Gradually add neem powder extract, tulsi powder extract, orange peel extract, red lentils powder extract. Stir continuously for uniform dispersion



Fig no.11: Herbal Extracts

2.11.4. Add scrubbing agent

Add walnut shell powder and mix thoroughly to ensure even exfoliating texture.

2.11.5. Add fragrance

After cooling the solution add fragrance oil.

2.11.6. Molding

Fill the soap mold with the mixture. To release trapped air, gently tap.

2.11.7. Setting

Let cool and solidify at room temperature (or refrigerate for faster setting). Leave undisturbed for 4-6 hrs.

2.11.8. Demolding & storage remove from mold carefully



Fig no.12: Prepared Soap

2.12. Evaluation Test

2.12.1. Evaluation of Organoleptic Characteristics

Visually inspect the transparency and color against a white background, and smell the odor.

2.12.2. Weight determination

Use an electronic weighing balance to measure weight



Fig no.13: Weight determination Test

2.12.3. Foam Retention

Prepare 25 ml of 1% soap solution and pour it into a 100 ml graduated cylinder. Then shake the graduated cylinder 10 times. After 4 to 5 minutes, record the volume of foam.



Fig no. 14: Foam Retention Test

2.12.4. Foam Height

0.5 g of soap sample was taken and dissolved in 25 ml of distilled water. Then, it was transferred to a 100 ml measuring cylinder and the volume was increased to 50 ml by adding water. It was kept stable by giving 25 strokes and the height of the foam was measured by measuring the aqueous volume up to 50 ml. If the height of the foam increased to 25 ml, the total height of the foam was 75 ml.

2.12.5. pH test

The pH was measured using a digital pH meter and found to be alkaline.

2.12.6. Irritation Test

To avoid any skin irritation, a small amount of scrubbing soap was applied to the skin and left on for a few minutes.

2.12.7. Washability

The scrub soap was applied to the skin and washed off with water. Upon examination by hand, it was found that the mixture applied to the skin came off easily when washed off with water.

2.12.8. Grittiness

By applying it to the skin, it is checked whether there are any rough particles in it.

2.12.9. Consistency

Once the desired consistency is reached, turn off the heat and let it sit at room temperature for 1-2 minutes.

3. MATERIALS AND METHODS

The prepared walnut shell powder-based herbal face scrub soap was evaluated for various physicochemical and cosmetic parameters. The observations are summarized below.

Sr. No.	Parameter	Result
1	State	Solid
2	Color	Yellow to Brown
3	Odour	Pears type fragrance
4	pH	8.2 (mild alkaline, suitable for skin)
5	Foam Retention Time	Good (foam stable for 4-6 minutes)
6	Foam Height	75 ml (indicating good foaming ability)
7	Irritability	Non irritant
8	Washability	Easily washable with water
9	Removal	Effectively removes dirt
10	Spreadability	Good, spread easily on wet skin
11	Consistency	Firm and Uniform
12	Grittiness	Mild grittiness (due to walnut shell powder, suitable for exfoliation)
13	Weight	20 gm

The formulated herbal scrub soap showed satisfactory results in all evaluation parameters. The pH was within an acceptable range, indicating it is safe for topical application. The presence of walnut shell powder provided effective exfoliation without causing irritation. Herbal ingredients like neem, tulsi, and aloe vera contributed to antimicrobial, soothing, and moisturizing properties.

The soap exhibited good foam formation and retention, which is important for cleansing efficiency. The product was easy to apply, spread, and wash off, making it user-friendly. Mild grittiness confirmed its suitability as a scrub without being too harsh on the skin.

4. CONCLUSION

Using natural ingredients, the current study effectively developed and assessed a herbal face scrub soap based on walnut shell powder. The prepared formulation demonstrated good physicochemical properties, satisfactory cleansing ability, and effective exfoliating action.

The inclusion of herbal ingredients such as neem, tulsi, orange peel, and aloe vera enhanced the therapeutic and cosmetic value of the soap. This product is proven to be non-irritating, stable, and suitable for daily use on all skin types (especially oily and acne-prone skin). Therefore, this successfully developed herbal scrub can be considered a safe, effective, and environmentally friendly alternative to synthetic exfoliating products. Further research, including stability testing and microbial analysis, can be conducted to improve its commercial viability.

REFERENCES

- [1] "Formulation And Evaluation Of Herbal Scrub Soap", JETIR Research Journal, Mr. Yogesh A. Chaudhari , Dr. Umesh A. Mahajan , Miss. Anuja G. Patil , Mr. Bhushan P. Patil , Mr. Rohit S. Patil, Dr. Sandip R. Pawar , Dr. Bharat V. Jain.

- [2] "FORMULATION AND EVALUATION OF HERBAL SCRUBBING SOAP", World Journal of Pharmaceutical Research, PallaviKatyarsingJadhav, Ayushi Suresh Jaiswal, PratikshaBhausahabHiwrale and TejasBalasaheb Gore and AshwiniKhaimar.
- [3] Chaudhari, Y. A., Mahajan, U. A., Patil, A. G., et al. "Formulation and Evaluation of Herbal Scrub Soap." JETIR Research Journal, 2020.
- [4] Jadhav, P. K., Jaiswal, A. S., Hiwrale, P. B., et al. "Formulation and Evaluation of Herbal Scrubbing Soap." World Journal of Pharmaceutical Research, 2021.
- [5] Barel, A. O., Paye, M., &Maibach, H. I. Handbook of Cosmetic Science and Technology. CRC Press, 2014.
- [6] Kokate, C. K., Purohit, A. P., &Gokhale, S. B. Pharmacognosy. NiraliPrakashan, 2018.
- [7] Sharma, P. P. Cosmetics – Formulation, Manufacturing and Quality Control. Vandana Publications, 2019.
- [8] Draeos, Z. D. "Cosmeceuticals: What is Real, What is not." Dermatologic Clinics, 2009.
- [9] Mukherjee, P. K. Quality Control of Herbal Drugs. Business Horizons, 2019.
- [10] Kaur, C. D., &Saraf, S. "Herbal Cosmetics: An Overview." Indian Journal of Natural Products and Resources, 2010.
- [11] Ali, A., &Yosipovitch, G. "Skin pH: From Basic Science to Basic Skin Care." ActaDermato-Venereologica, 2013.
- [12] Anitha, T. "Medicinal Plants Used in Skin Protection." Asian Journal of Pharmaceutical and Clinical Research, 2012.
- [13] Kumar, S., &Malhotra, R. "Neem (Azadirachta indica): A Review." Journal of Pharmaceutical Research, 2010.
- [14] Prakash, P., & Gupta, N. "Therapeutic Uses of Ocimum sanctum (Tulsi)." Indian Journal of Physiology and Pharmacology, 2005.
- [15] Ghasemzadeh, A., &Jaafar, H. "Antioxidant Properties of Citrus Peel." Molecules, 2011.
- [16] Boyer, J., & Liu, R. H. "Apple Phytochemicals and Their Health Benefits." Nutrition Journal, 2004.
- [17] Deshmukh, S., &Pawar, A. "Formulation and Evaluation of Herbal Face Scrub." International Journal of PharmTech Research, 2017.
- [18] Kapoor, V. P. "Herbal Cosmetics for Skin Care." Natural Product Radiance, 2005.
- [19] Chanchal, D., &Swarnlata, S. "Novel Approaches in Herbal Cosmetics." Journal of Cosmetic Dermatology, 2008.
- [20] Khan, A. W., &Kotta, S. "Formulation of Herbal Soap Using Natural Ingredients." International Journal of Research in Pharmaceutical Sciences, 2018.
- [21] Singh, M., et al. "Evaluation of Herbal Soap Formulations." Asian Journal of Pharmaceutical Research, 2015.
- [22] Banchhor, M., et al. "Formulation and Evaluation of Polyherbal Face Wash." International Journal of Pharmaceutical Sciences Review and Research, 2016.
- [23] Pandey, A., &Tripathi, S. "Concept of Standardization, Extraction and Pre-Phytochemical Screening." Journal of Pharmacognosy and Phytochemistry, 2014.
- [24] Kumar, V., et al. "Cosmetic Potential of Herbal Extracts." International Journal of Cosmetic Science, 2012.
- [25] Gediya, S. K., et al. "Herbal Plants: Used as Cosmetics." Journal of Natural Products and Plant Resources, 2011.