



**INTERNATIONAL JOURNAL OF  
PHARMACEUTICAL SCIENCES**  
[ISSN: 0975-4725; CODEN(USA): IJPS00]  
Journal Homepage: <https://www.ijpsjournal.com>



## Research Paper

# Formulation and Evaluation of Polyherbal Antifungal Shampoo

Kamlesh Patel<sup>1</sup>, Praveen Kumar Sahu\*<sup>2</sup>, Suchita Wamankar<sup>3</sup>, Dr Gyanesh Kumar Sahu<sup>4</sup>, Dr Chanchal Deep Kaur<sup>5</sup>

<sup>1,5</sup> Rungta Institute of Pharmaceutical Sciences, Bhilai

<sup>2,3,4</sup> Rungta Institute of Pharmaceutical Science & Research, Bhilai.

### ARTICLE INFO

Published: 30 Mar 2026

**Keywords:**

Shikakai, Reetha, Amla,  
Neem, Tulsi, Aloe vera gel..

**DOI:**

10.5281/zenodo.19332664

### ABSTRACT

This study's major goal is to create an antifungal herbal shampoo with curry leaves as the key ingredient, which are known to strengthen hair follicles and encourage hair growth. This herbal shampoo attempts to improve hair growth, strength, and natural darkening while preventing hair loss, a frequent hair condition. An efficient and secure shampoo formulation was created by combining curry leaves with additional natural ingredients including amla, aloe vera gel, neem, Reetha, Shikakai. The shampoo is made to clean hair by eliminating dandruff, sebum, and filth without the dangers of chemical compounds that are frequently included in commercial shampoos. There are many different kinds of shampoo, both liquid and solid, but this article focuses on a natural herbal liquid shampoo<sup>2,3</sup>.

### INTRODUCTION

Growing worries about the negative effects of synthetic substances frequently present in personal care products have led to an increase in the demand for herbal cosmetic formulations worldwide in recent years<sup>2</sup>. There has been a notable movement in the hair care industry toward herbal substitutes that offer long-term advantages, safety, and effectiveness. In order to improve scalp health and hair vitality, two shampoos and hair treatment formulas are increasingly including botanical components, which are recognized for their

therapeutic qualities<sup>3</sup>. Hair is the fundamental element of human attractiveness. Herbs have been used for hair management, cleaning, and decoration since ancient times<sup>6</sup>. As time has passed. Despite the substantial market share of synthetic agents, people are becoming aware of their negative effects impacts on hair, eyes, and skin<sup>2</sup>. Herbal shampoo is a kind of cosmetic preparation made with natural plant materials called herbs. Any hair washing product made with extracts from herbs can be referred to as "herbal shampoo." Another way to think of it is as a thick

\*Corresponding Author: Praveen Kumar Sahu

Address: Rungta Institute of Pharmaceutical Science & Research, Bhilai.

Email ✉: [praveensahu31@gmail.com](mailto:praveensahu31@gmail.com)

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



liquid hair care solution that cleanses and gets rid of oil and dirt from hair<sup>5</sup>.

### 1.1 Poly-herbal antifungal shampoo

A hair-cleaning product made with extracts from two or more medicinal plants with antifungal qualities is called a polyherbal antifungal shampoo. It is intended to cure or prevent fungal illnesses including seborrheic dermatitis and dandruff while cleaning the hair and scalp. Herbal components including neem, reetha, shikakai, amla, and tulsi, which offer organic cleaning, antibacterial, and conditioning properties, are frequently found in these shampoos. The development of fungi that cause scalp infections is inhibited by the combined action of many herbs. Polyherbal antifungal shampoos are popular for preserving scalp health and enhancing hair quality since they are often thought to be safer and gentler than synthetic shampoos.

### 1.2 Function of poly shampoo

- Removes dirt, excess oil, dust, sweat, and pollutants from hair and scalp.
- Reduce fungal infection (like dandruff, Malassezia)
- Prevent bacterial scalp infection.
- Prevents scalp dryness and maintains natural moisture.
- Cleans scalp pores and promotes healthy hair growth.
- Improves hair texture.

### 1.3 Difference of poly-herbal shampoo and synthetic shampoo

#### Polyherbal Shampoo

1. Made from medicinal plant such as neem, amla, reetha, and shikakai.
2. Contains natural ingredients and herbal active compounds.

3. Usually milder and safer for hair and scalp.
4. Provides additional benefits like antifungal, anti-dandruff, and hair nourishment.
5. Produces less foam because it uses natural surfactants.

### Synthetic Shampoo

1. Prepared using chemical ingredients such as SLS, parabens, and silicones.
2. Contains artificial surfactants, preservatives, and fragrances.
3. Mainly used for strong cleansing and high foaming action.
4. May cause side effects like scalp irritation, dryness, hair fall, or allergies.
5. Produces more foam due to synthetic detergents.

### 1.4 Anatomy and Physiology of Hair

The fatty layer of the scalp contains follicular units from which hair develops. Each unit has one to four hairs and a hair bulb at the base that generates hair cells that are fed by dermal blood vessels. As hair develops and separates from the skin, its outer layer solidifies into keratin<sup>6</sup>.

There are three primary stages of hair growth:

- (1) **Anagen (Growth Phase):** Hair production is active and can continue for years.
- (2) **Catagen (Transitional Phase):** A brief stage during which hair growth ceases.
- (3) **Telogen (Resting Phase):** New growth starts and hair loses.

### 2. Classification Of Shampoo<sup>7</sup>

#### A. Based on the appearance:

- Powder shampoo
- Liquid shampoo
- Gel shampoo
- Oil shampoo
- Dry shampoo



### B. Based on their origin:

- Herbal shampoo
- Synthetic shampoo

### C. Based on their function:

- Conditioning shampoo
- Anti dandruff shampoo
- Baby shampoo
- Clarifying shampoo

- Herbal ingredients reduce the chances of itching, irritation, redness or hair damage.
- Herbal ingredients are biodegradable.
- Less environmental toxic load compared to fully synthetic shampoo.
- Many herbal ingredients are easily available and inexpensive.
- People nowadays prefer natural and herbal products, so polyherbal shampoo have high market demand.

### 3. Advantages of poly-herbal shampoo

- Cleansing properties, improving hair hygiene.
- Gentle on scalp and suitable for long-term use.

### 4. MATERIALS AND METHODS

#### Materials -

Table 4.1- Ingredients

S.N.	Ingredients	Quantity (50ml)	Properties
1	Reetha	5g	Natural cleanser / Surfactant
2	Shikakai	5g	Hair cleanser / Conditioner
3	Amla	5g	Antioxidant
4	Neem	5g	Antifungal / Antibacterial
5	Tulsi	2.5g	Antimicrobial
6	Aloe vera gel	2.5ml	Moisturizer and Conditioner
7	Sodium lauryl sulphate	5g	Foaming Agent
8	Citric Acid	0.1g	Ph Adjuster
9	Methyl Paraben	0.05g	Preservative
10	Distilled Water	Up to 50ml	Solvent

### Methodology

1. Take 5g each of reetha, shikakai, amla, neem, tulsi powder.
- ↓
2. Add about 50ml of distilled water, soak overnight.
- ↓
3. Boil for 15-20 minutes, cool, and filter.



4. Collect filtrate. (this is combined herbal extract)



5. Take 25 ml distilled water in a clean beaker.



6. Add sodium lauryl sulphate (SLS) slowly with gentle stirring to form a uniform solution (avoid foam).



7. Add aloe vera gel, mix well.



8. Add reetha, shikakai, amla, neem, tulsi extracts one by one to the base with gentle stirring.



9. Continue stirring until a uniform blend is obtained.



10. Dissolve methyl paraben in a small amount of warm water, then add to the mixture.



11. Adjust pH between 5.5-6.5 using citric acid solution.



## 12. Prepared shampoo



13. Transfer the prepared shampoo into a clean, dry, labeled bottle.



14. Store in a cool, dark place.

## 5. RESULT

The formulated polyherbal shampoo was evaluated to ensure its effectiveness, stability, and consumer acceptability. The tests performed included physical appearance, pH determination, foaming, and viscosity determination. These evaluations are necessary to verify the effectiveness and safety of the shampoo by comparing it with marketed formulations.

### 1. Physical appearance

The prepared formulations were assessed for fluidity, clarity, and capacity to produce foam.

**Table 1. physical appearance**

Color	Brownish color
Odor	Characteristic
Transparency	Not transparent
Texture	Smooth

### 2. pH determination

2 mL of the polyherbal shampoo solution was taken into a Petri dish. After that, a pH litmus paper was dipped into the 2 mL solution. The observed pH was found to be **5.5 to 6.5**.



**Fig. pH determination**

### 3. Foaming test

To evaluate the foaming ability, the cylinder shake method was used. 1.5 mL of polyherbal shampoo was taken in a 10 mL graduated cylinder. The cylinder was covered by hand and shaken 10–12 times. After shaking, the foam produced was measured.



**Fig. Foaming Test**

#### 4. Viscosity determination

Viscosity influences the spreading ability of shampoo and its ease of application. The viscosity of the prepared shampoo was determined at 25°C using an Ostwald viscometer.

#### 5. Microbial test

A small amount of the prepared shampoo was taken and stored at different temperatures. However, no microbial growth was observed in the prepared shampoo.

**Table 2. Evaluation parameter**

Evaluation parameter	Inference
Color	Brownish color
Odor	Characteristic
Transparency	Not transparent
Texture	Smooth
pH determination	5 – 6
Microbial activity	No microbial growth

**Table 3. Stability test**

Parameter	Room temperature
Color	No change
Odor	No change

### DISCUSSION

The polyherbal shampoo showed satisfactory performance with acceptable appearance, consistency, and cleansing ability. The natural ingredients contributed to effective hair cleaning while being gentle on the scalp. Adequate foaming and stability were observed, indicating a well-balanced formulation. Overall, it offers a safe and eco-friendly alternative to synthetic shampoos.

### CONCLUSION

Poly-herbal shampoo formulation and assessment is a complicated procedure that necessitates careful consideration of several elements. These include choosing the herbal powders or

components needed for the formulation and assessing the efficacy and safety of the finished product. There are a number of possible advantages to using herbal components in shampoo composition, including better hair health and less of an influence on the environment. To guarantee the product's efficacy and safety, however, appropriate testing and assessment are crucial. All things considered, the development and assessment of herbal shampoo is a crucial field of study that may provide customers a more sustainable and natural hair care choice.

The current study's goal was to create a herbal shampoo that guards against fungal infections. Furthermore, compared to chemical conditioning treatments, it is safer. The shampoo's pH was modified to preserve the scalp's acidic environment. Shampoo is made with a variety of plant powders or herbal substances, including neem, reetha, shikakai, amla, and aloe vera.

### REFERENCES

- Kale, K., & Somani, S. (2023). Formulation and evaluation of herbal shampoo for curry leaves. *J. Herb. Res.*, 12(3), 45–52.
- Jadhav, S. R., et al. (2024). A review on *Murraya koenigii* for hair growth promotion. *Int. J. Ayurvedic Herb. Med.*, 15(1), 67–78.
- Sharma, P., & Mehta, V. (2023). Antioxidant properties of amla and its potential in hair care formulations. *Int. J. Cosmet. Sci.*, 11(2), 88–99.
- Satyanarayana, T., Nirmala, D., Sai, C., Dileep, K., Sai, K., Akshitha, M., Sucharitha, V., & Sagarika, M. (2022). Formulation and evaluation of polyherbal shampoo powder. *International Journal of Pharmacy and Pharmaceutical Research*. Available at: [www.ijppr.humanjournals.com](http://www.ijppr.humanjournals.com)
- More, A. G., Pote, P. D., Kore, P. S., & Garhwani, Y. D. (2022). Formulation and evaluation of polyherbal anti-dandruff



- shampoo. *International Journal of Ayurvedic Medicine*, 13(2), 365–369. Available at: <http://ijam.co.in>  
<https://doi.org/10.47552/ijam.v13i2.2256>
6. Singh, S., & Maury, S. (2015). Formulation and evaluation of polyherbal antidandruff powder shampoo using pomegranate seed and guava leaves. *World Journal of Pharmaceutical Research*, 11. <https://doi.org/10.20959/wjpr20226-24088>
  7. Stenn KS, Paus R. Controls of hair follicle cycling. *Physiol Rev* 2001;81(1):449–494. <https://doi.org/10.1152/physrev.2001.81.1.449>
  8. Lodha G. Formulation and evaluation of polyherbal shampoo to promote hair growth and provide antidandruff action. *J Drug Deliv Ther* 2019;9(4-A):296–300. <https://doi.org/10.22270/jddt.v9i4-A.3529>
  9. Mainkar AR, Jolly CI. Formulation of natural shampoos. *Int J Cosmet Sci* 2001;23:59–62. <https://doi.org/10.1046/j.1467-2494.2001.00055.x>
  10. Ishii MK. Objective and instrumental methods for evaluation of hair care product efficacy and substantiation of claims. In: *Hair and hair care*. New York: Marcel Dekker, Inc; 1997. p. 261–302. <https://doi.org/10.1201/9780203719565-10>
  11. Khaloud Al Badi, Shah A. Khan. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos. *Beni-Suef Univ J Basic Appl Sci* 2014;3:301–305. <https://doi.org/10.1016/j.bjbas.2014.11.001>
  12. Latha M, Ramkumar M, Pari L, et al. Phytochemical and antimicrobial study of *Scoparia dulcis* L. *J Med Food* 2006;9(3):391–394. <https://doi.org/10.1089/jmf.2006.9.391>
  13. Manikar AR, Jolly CI. Evaluation of commercial herbal shampoos. *Int J Cosmet Sci* 2000;22(5):385–91. <https://doi.org/10.1046/j.1467-2494.2000.00050.x>
  14. Khaloud Al Badi, Shah A. Khan. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos. *Beni-Suef Univ J Basic Appl Sci* 2014;3(4):301–305. <https://doi.org/10.1016/j.bjbas.2014.11.001>
  15. Zambare KK, et al. Preparation and evaluation of polyherbal shampoo. *Res J Top Cosmet Sci* 2019;10(2):41–44. <https://doi.org/10.5958/2321-5844.2019.00008.5>
  16. Utami SM, Djajadisastra J, Saputri FC. Using hair growth activity, physical stability, and safety tests to study hair tonics containing ethanol extract of licorice (*Glycyrrhiza glabra* Linn.). *Int J Appl Pharm* 2017;9:44–48. <https://doi.org/10.22159/ijap.2017v9i4.19311>
  17. Aghel N, Moghimipour B, Dana RA. Formulation of a herbal shampoo using total saponins of *Acanthophyllum squarrosum*. *Iran J Pharm Res* 2007;6(3):167–172. <https://doi.org/10.22037/ijpr.2010.717> (brieflands.com)
  18. Hay RJ, Graham-Brown RA. Dandruff and seborrheic dermatitis: Causes and management. *Clin Exp Dermatol* 1997;22(1):2–6. <https://doi.org/10.1046/j.1365-2230.1997.d01-171.x>
  19. Tarun J, Susan J, Susan VJ, Criton S. Evaluation of pH of bathing soaps and shampoos for skin and hair care. *Indian J Dermatol* 2014;59(5):442–444. <https://doi.org/10.4103/0019-5154.139861>
  20. Tegeli VS, et al. Formulation and evaluation of polyherbal shampoo containing different herbal extract. *Res J Top Cosmet Sci* 2022;13(2):87–91.

- <https://doi.org/10.5958/2321-5844.2022.00015.2>
21. Manikar AR, Jolly CI. Evaluation of commercial herbal shampoos. Int J Cosmet Sci 2000;22(5):385–91. <https://doi.org/10.1046/j.1467-2494.2000.00050.x>
  22. Harrison JL, Davis KD. Cold-evoked pain varies with skin type and cooling rate: A psychophysical study in humans. Pain 1999;83:123–135. [https://doi.org/10.1016/S0304-3959\(99\)00175-0](https://doi.org/10.1016/S0304-3959(99)00175-0)
  23. Randall VA. Is alopecia areata an autoimmune disease? Lancet 2001;358:1922–1924. [https://doi.org/10.1016/S0140-6736\(01\)06855-6](https://doi.org/10.1016/S0140-6736(01)06855-6)
  24. Maffei C, Fossati A, Rinaldi F, et al. Personality disorders and psychopathologic symptoms in patients with androgenetic alopecia. Arch Dermatol 1994;130:868–872. <https://doi.org/10.1001/archderm.1994.01690080080025>
  25. Wolfram LJ. Human hair: A unique physicochemical composite. J Am Acad Dermatol 2003;48:S106–S114. <https://doi.org/10.1067/mjd.2003.139>
  26. Khaloud Al Badi, Shah A. Khan. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos. Beni-Suef Univ J Basic Appl Sci 2014;3:301–305. <https://doi.org/10.1016/j.bjbas.2014.11.001>
  27. Ranganathan S, Mukhopadhyay T. Dandruff: The most commercially exploited skin disease. Indian J Dermatol 2010;55:130–134. <https://doi.org/10.4103/0019-5154.74535>
  28. Hay RJ, Graham-Brown RA. Dandruff and seborrheic dermatitis: Causes and management. Clin Exp Dermatol 1997;22:2–6. <https://doi.org/10.1046/j.1365-2230.1997.d01-171.x>
  29. Aghel N, Moghimipour E, Raies Dana A. Formulation of a herbal shampoo using total saponins of *Acanthophyllum squarrosum*. Iran J Pharm Res 2010;6(3):167–172. <https://doi.org/10.22037/ijpr.2010.717> (brieflands.com)
  30. Barrera-Rojas CH, Otoni WC, Nogueira FTS. Shaping the root system: The interplay between miRNA regulatory hubs and phytohormones. J Exp Bot 2021;72(20):6822–6835. <https://doi.org/10.1093/jxb/erab299>

**HOW TO CITE:** Kamlesh Patel, Praveen Kumar Sahu, Suchita Wamankar, Dr Gyanesh Kumar Sahu, Dr Chanchal Deep Kaur, Formulation and Evaluation of Polyherbal Antifungal Shampoo, Int. J. of Pharm. Sci., 2026, Vol 4, Issue 3, 3830-3837, <https://doi.org/10.5281/zenodo.19332664>

