



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



Review Paper

A Systematic Review on Herbal Anti-Dandruff Agents: Focus on Guava and Curry leaves

Monika Sharavan, Shweta Ram*, Akanksha Sahu, Suchita Wamankar, Dr. Gyanesh Kumar Sahu, Dr. Chanchal Deep Kaur

Rungta Institute of Pharmaceutical Sciences & Research, Kohka, Kurud, Bhilai.

ARTICLE INFO

Published: 20 Apr 2026

Keywords:

Dandruff, Polyherbal shampoo, Guava leaf extract, Curry leaf extract, Herbal formulation

DOI:

10.5281/zenodo.19660977

ABSTRACT

Dandruff is a common scalp condition characterized by excessive flaking of the scalp, itching, and mild irritation. It is primarily associated with the proliferation of lipophilic yeasts belonging to the genus *Malassezia*, which metabolize sebum lipids and contribute to disruption of the scalp barrier and abnormal keratinocyte turnover. Conventional management of dandruff commonly relies on synthetic antifungal agents such as ketoconazole, zinc pyrithione, and selenium sulfide. Although these treatments are effective, prolonged use may cause adverse effects including scalp dryness, irritation, and disturbance of the natural scalp microbiome. These limitations have encouraged increasing interest in herbal-based alternatives that offer safer and multifunctional therapeutic properties. Polyherbal anti-dandruff formulations have gained attention due to the combined biological activities of medicinal plants. In particular, *Psidium guajava* (guava leaves) and *Murraya koenigii* (curry leaves) have shown promising potential due to their rich phytochemical composition, including flavonoids, phenolic compounds, and carbazole alkaloids with documented antimicrobial and antioxidant activities. Additional herbal ingredients such as *Azadirachta indica* (neem) and *Aloe barbadensis* (aloe vera) further enhance the formulation by contributing antifungal, anti-inflammatory, and soothing effects that support scalp health. This review discusses the pathophysiology of dandruff and highlights the role of selected herbal ingredients in polyherbal anti-dandruff formulations. It also outlines important formulation considerations and evaluation parameters involved in the development of herbal anti-dandruff shampoos. The integration of phytochemical knowledge with appropriate formulation strategies may provide an effective and safer alternative to conventional synthetic shampoos. Polyherbal anti-dandruff systems therefore represent a promising approach for maintaining scalp hygiene and managing dandruff while minimizing potential side effects associated with synthetic agents.

***Corresponding Author:** Shweta Ram

Address: Rungta Institute of Pharmaceutical Sciences & Research, Kohka, Kurud, Bhilai

Email ✉: shwetaram2000@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.



INTRODUCTION

Dandruff is a common scalp disorder characterized by excessive flaking of the scalp, itching, and mild irritation. It is mainly associated with the proliferation of lipophilic yeasts of the genus *Malassezia*, which utilize scalp lipids and contribute to disturbance of the scalp barrier and abnormal keratinocyte turnover. Although dandruff is not a severe medical condition, it affects a large portion of the population and can cause discomfort and cosmetic concern.

Conventional anti-dandruff treatments mainly rely on synthetic antifungal agents such as ketoconazole, zinc pyrithione, and selenium sulfide. These formulations are effective in controlling fungal growth and reducing dandruff symptoms.

Polyherbal anti-dandruff shampoos prepared using medicinal plants provide a natural approach for maintaining scalp health. Plants such as *Psidium guajava* (guava leaves) and *Murraya koenigii* (curry leaves) contain bioactive compounds including flavonoids, phenolic compounds, and carbazole alkaloids with antimicrobial and antioxidant activities. Additional herbs such as *Azadirachta indica* (neem) and *Aloe barbadensis* (aloe vera) may further improve scalp condition by providing antifungal, soothing, and moisturizing effects. The combined use of these botanicals offers a multi-target strategy for controlling dandruff while supporting overall scalp hygiene.

Advantages of Polyherbal Anti-Dandruff Shampoo

- Helps control dandruff by reducing fungal growth on the scalp.
- Herbal ingredients provide antioxidant and anti-inflammatory effects that soothe scalp irritation.
- Plant-based formulations are generally milder and safer for long-term use.

- Natural extracts such as aloe vera help maintain scalp hydration and prevent dryness.
- Polyherbal formulations target multiple causes of dandruff simultaneously, including microbial growth and scalp imbalance.

1. Classification of Shampoos

Dandruff is a multifactorial scalp disorder caused by the interaction of microbial activity, sebum production, and scalp barrier disruption. The condition mainly involves the overgrowth of *Malassezia* species on the scalp, which alters normal skin cell turnover and leads to visible flaking and irritation.

2.1 Based on Usage

❖ Regular Shampoo

Regular shampoo is used for routine cleansing of hair and scalp. It helps remove dirt, oil, and sweat accumulated during daily activities.

- Suitable for normal hair types.
- Maintains general scalp hygiene.
- Contains mild surfactants for frequent use.

❖ Anti-Dandruff Shampoo

Anti-dandruff shampoo is specifically formulated to control dandruff and reduce scalp flaking. It targets fungal growth and scalp irritation.

- Helps reduce *Malassezia* growth on the scalp.
- Provides relief from itching and irritation.
- May contain herbal or synthetic antifungal agents.

❖ Herbal Shampoo

Herbal shampoo is prepared using plant-based ingredients and natural extracts. It is preferred for its mild action and reduced side effects.

- Contains extracts like guava leaves, curry leaves, neem, and aloe vera.



- Provides nourishment along with cleansing.
- Suitable for long-term use.

2.2 Based on Form / Physical State

❖ Liquid Shampoo

Liquid shampoo is the most commonly used form for hair cleansing. It is easy to apply and spreads uniformly on hair.

- Easy to use and rinse.
- Provides good foaming and cleansing action.
- Suitable for all hair types.

❖ Gel Shampoo

Gel shampoo has a thicker consistency compared to liquid shampoo. It provides better control during application.

- Less spillage during use.
- Provides smooth application.
- Often used in cosmetic and herbal formulations.

❖ Dry Shampoo

Dry shampoo is a powder or spray-based product used without water. It absorbs excess oil from the scalp.

- Useful when washing with water is not possible.
- Provides temporary freshness.
- Does not replace regular shampooing.

2.3 Based on Function

❖ Cleansing Shampoo

Cleansing shampoo is designed to remove dirt, oil, and product buildup from the scalp.

- Contains effective surfactants.
- Provides deep cleaning action.

❖ Conditioning Shampoo

Conditioning shampoo contains ingredients that improve hair texture and softness.

- Reduces dryness and roughness.
- Improves manageability of hair.

❖ Medicated Shampoo

Medicated shampoo is used to treat specific scalp conditions such as dandruff or infections.

- Contains active therapeutic agents.
- Provides targeted treatment.

2.4 Based on Composition

❖ Synthetic Shampoo

Synthetic shampoo is prepared using chemical ingredients and synthetic surfactants.

- Provides strong cleansing action.
- May cause dryness or irritation with long-term use.

❖ Herbal / Polyherbal Shampoo

Polyherbal shampoo is formulated using a combination of medicinal plant extracts.

- Contains natural bioactive compounds.
- Provides antifungal, antioxidant, and soothing effects.
- Safer for regular and long-term use.

2.5 Ideal Properties of Polyherbal Anti-Dandruff Shampoo

- Should effectively remove dandruff flakes and excess oil from the scalp.
- Should not cause irritation or dryness and must be gentle on scalp and hair.
- Should produce adequate and stable foam for effective cleansing.
- Should maintain a suitable pH (5.5–6.5) for scalp compatibility.
- Should be physically and chemically stable during storage.

2.6 Functions of Polyherbal Anti-Dandruff Shampoo

- Helps control fungal growth responsible for dandruff.
- Reduces scalp irritation, itching, and inflammation.
- Provides antioxidant protection to scalp cells.
- Maintains scalp hydration and overall hair health.

2.7 Problems Related to Scalp and Hair

- Dandruff and flaking
- Scalp irritation and itching
- Dryness of scalp
- Hair fall and weak hair roots

2. Drug Profile

3.1. *Psidium guajava* (Guava Leaves)

- Biological name – *Psidium guajava*
- Common name – Guava leaves
- Synonyms – *Psidium pyriferum*
- Kingdom – Plantae
- Family – Myrtaceae
- Genus – *Psidium*
- Species – *Psidium guajava*
- Order – Myrtales
- Properties – Antifungal, Antioxidant, Anti-inflammatory



Figure 1. Guava Leaves

3.2. *Murraya koenigii* (Curry Leaves)

- Biological name – *Murraya koenigii*
- Common name – Curry leaves
- Synonyms – *Bergera koenigii*
- Kingdom – Plantae
- Family – Rutaceae
- Genus – *Murraya*
- Species – *Murraya koenigii*
- Order – Sapindales
- Properties – Antimicrobial, Antioxidant, Hair strengthening



Figure 2. Curry Leaves

3.3. *Azadirachta indica* (Neem)

- Biological name – *Azadirachta indica*
- Common name – Neem, Nimba
- Synonyms – *Melia azadirachta*
- Kingdom – Plantae
- Family – Meliaceae
- Genus – *Azadirachta*
- Species – *Azadirachta indica*
- Order – Sapindales
- Properties – Antifungal, Antibacterial, Anti-inflammatory



Figure 3. Neem**3.4. *Aloe barbadensis* (Aloe Vera)**

- Biological name – *Aloe vera* (L.) Burm.f.
- Common name – Aloe vera, Ghritkumari
- Synonyms – *Aloe barbadensis* Miller
- Kingdom – Plantae
- Family – Asphodelaceae
- Genus – Aloe
- Species – Aloe vera
- Order – Asparagales
- Properties – Moisturizing, Soothing, Anti-inflammatory

**Figure 4. Aloe Vera**

The combination of these herbal ingredients in a polyherbal formulation provides a multi-target approach for dandruff management. Their antifungal, antioxidant, and soothing properties work together to control dandruff while maintaining overall scalp health.

3. MATERIAL AND METHOD

S. No	Ingredients	Quantity (100 mL)	Properties
01	Guava Leaf Extract	3 g	Antifungal, Antioxidant
02	Curry Leaf Extract	2 g	Hair strengthening, Antimicrobial
03	Neem Extract	2 g	Antifungal, Antibacterial
04	Aloe vera Gel	3 g	Moisturizer, Soothing agent
05	SLS	15 mL	Surfactant, Cleansing agent
06	Glycerin	3 mL	Humectant, Moisturization
07	Sodium Benzoate	0.5 g	Preservative
08	Citric Acid	q.s	pH adjuster
09	Distilled Water	q.s to 100 mL	Vehicle, Stability

The polyherbal anti-dandruff shampoo was prepared using guava, curry leaves, neem, and aloe vera extracts in a suitable surfactant base. The formulation was evaluated for pH, viscosity, foam stability, surface tension, wetting time, and antifungal activity. Stability studies were conducted to ensure consistency and product quality.

CONCLUSION

Dandruff is a common scalp disorder associated with microbial imbalance, increased sebum

metabolism, and abnormal keratinocyte turnover. Conventional treatments mainly rely on synthetic antifungal agents, which may cause certain side effects with prolonged use. In this context, herbal formulations have emerged as a promising alternative for managing dandruff while maintaining scalp health.

Polyherbal anti-dandruff shampoos containing medicinal plants such as *Psidium guajava*, *Murraya koenigii*, *Azadirachta indica*, and *Aloe barbadensis* provide a natural and multi-target

approach for dandruff management. These herbal ingredients possess antimicrobial, antioxidant, and anti-inflammatory properties that help control fungal growth, reduce scalp irritation, and maintain scalp hygiene.

Overall, polyherbal formulations represent a safe and effective approach for the development of herbal anti-dandruff shampoos. With further research, standardization, and clinical validation, such formulations have the potential to become valuable alternatives to conventional synthetic anti-dandruff products.

REFERENCES

1. Revansiddappa M, Sharadha R, Abbulu K. Herbal anti-dandruff shampoo: formulation and evaluation. *Journal of Pharmacognosy and Phytochemistry*. 2018;7(4):764–767.
2. Lodha G. Development of a polyherbal shampoo with anti-dandruff potential. *Journal of Drug Delivery and Therapeutics*. 2019;9(4-A):296–300.
3. Shirwaikar A, Rajendran K, Punitha ISR. Evaluation of antimicrobial properties of *Psidium guajava* leaves. *Indian Journal of Pharmaceutical Sciences*. 2006;68(6):803–806.
4. Borda LJ, Wikramanayake TC. Seborrheic dermatitis and dandruff: an overview. *Journal of Clinical and Investigative Dermatology*. 2015;3(2):10–16.
5. Dawson TL Jr. Role of *Malassezia* in dandruff pathogenesis. *Journal of Cosmetic Science*. 2007;58(1):1–14.
6. Prohic A, Ozegovic L. Insights into *Malassezia* species and dandruff. *Clinical Dermatology*. 2015;33(3):247–254.
7. Ashbee HR, Evans EGV. Immune response in diseases linked to *Malassezia*. *Clinical Microbiology Reviews*. 2002;15(1):21–57.
8. Kumar A, Sahoo P. Herbal ingredients used in cosmetic formulations for dandruff control. *World Journal of Pharmaceutical Research*. 2022;11(5):450–460.
9. Sharma G, Tomar S. Herbal anti-dandruff shampoo using neem: formulation and evaluation. *Journal of Chemical Health Risks*. 2025;15(5):1–9.
10. Kulkarni CT, Shirke RM, Shinde PB. Preparation and evaluation of natural anti-dandruff shampoo. *International Journal of Pharmaceutical Sciences and Research*. 2025;16(2):502–509.
11. Khandagale SS, Supekar AV, Sarukh VS, Bhasme PS. Development of neem-based herbal shampoo. *International Journal of Ayurveda and Pharma Research*. 2023;10(12):36–41.
12. Al-Rimawi F, Imtara H, Abbadi J, et al. Antimicrobial activity of *Psidium guajava* leaf extract. *Scientific Reports*. 2025;15:39460.
13. Cheetra B, Govinden JS, Ranghoo V. Anti-dandruff potential of *Psidium guajava* extracts. *Natural Resources for Human Health*. 2022;3(1):38–45.
14. Ganjewala D. Carbazole alkaloids from *Murraya koenigii* and their biological activities. *Natural Product Communications*. 2009;4(8):1099–1108.
15. Jain V, Momin M, Laddha K. A comprehensive review on *Murraya koenigii*. *International Journal of Ayurvedic and Herbal Medicine*. 2012;2(4):607–627.
16. Subapriya R, Nagini S. Medicinal properties of neem: a review. *Current Medicinal Chemistry*. 2005;5(2):149–156.
17. Surjushe A, Vasani R, Saple DG. Aloe vera: therapeutic uses and properties. *Indian Journal of Dermatology*. 2008;53(4):163–166.
18. Viyoch J, et al. Antifungal activity of herbal extracts against *Malassezia furfur*. *Journal of Medicinal Plants Research*. 2011;5(7):1234–1238.



19. Chandar P, et al. Evaluation parameters of herbal shampoo formulations. *International Journal of Pharmaceutical Sciences Review and Research*. 2014;27(2):45–49.
20. Trüeb RM. Shampoo formulations and mechanisms of action. *International Journal of Trichology*. 2015;7(2):57–64.
21. Madnani N, Khan K. Hair cosmetics and scalp disorders. *Clinical Dermatology*. 2013;31(5):604–612.
22. Kaur R, Sharma A. Trends in polyherbal anti-dandruff formulations. *International Journal of Cosmetic Science*. 2021;43(3):215–224.
23. Kligman AM. The pathogenesis of dandruff and seborrheic dermatitis. *J Soc Cosmet Chem*. 1974;25:161–176.
24. Pierard GE, Pierard-Franchimont C. Dandruff and seborrheic dermatitis: clinical overview. *Am J Clin Dermatol*. 2006;7(2):101–109.

HOW TO CITE: Monika Sharavan, Shweta Ram, Akanksha Sahu, Suchita Wamankar, Dr. Gyanesh Kumar Sahu, Dr. Chanchal Deep Kaur, A Systematic Review on Herbal Anti-Dandruff Agents: Focus on Guava and Curry leaves, *Int. J. of Pharm. Sci.*, 2026, Vol 4, Issue 4, 3056-3062, <https://doi.org/10.5281/zenodo.19660977>

