

# "A Review on preparation of Herbal shampoo"

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## Abstract

Herbal shampoos are natural formulations made from ingredients like Amla, Shikakai, Reetha, Neem, and Aloe vera that provide cleansing, conditioning, and antimicrobial benefits with fewer side effects than synthetic shampoos. This review covers their traditional use, formulation, key ingredients, and evaluation parameters such as pH, foam ability, viscosity, and stability. Advantages like mild action and environmental safety, along with limitations such as low foaming and stability issues, are also highlighted. Overall, herbal shampoos offer a safe and effective alternative to chemical shampoos.

**Keywords:** Herbal shampoo, natural ingredients, Amla, Shikakai, Neem, formulation, evaluation parameters.

## Introduction

Hair and scalp hygiene play a vital role in overall personal care, and shampoos are the most widely used cosmetic products designed for effective cleansing. A shampoo primarily functions to remove dirt, sebum, environmental pollutants, residues of styling products, and microorganisms from the hair surface. Conventional or synthetic shampoos often rely on chemical surfactants, preservatives, artificial fragrances, and foaming agents which, although effective, may cause irritation, dryness, allergic reactions, or long-term scalp problems in sensitive individuals. This increasing concern regarding the adverse effects of synthetic ingredients has led to a significant shift in consumer preference toward natural and herbal-based hair-care products.<sup>[1]</sup>

Herbal shampoos are formulations prepared using plant-derived ingredients that exhibit cleansing, conditioning, antimicrobial, antioxidant, and hair-nourishing properties.

Traditional herbs such as Amla, Shikakai, Reetha, Bhringraj, Neem, Aloe vera, Hibiscus, and Fenugreek have been used in Ayurvedic and folk medicine for centuries to promote hair growth, strengthen hair roots, reduce dandruff, and maintain scalp health. These botanicals contain various phytoconstituents including saponins, flavonoids, tannins, alkaloids, vitamins, and essential oils that contribute to their therapeutic effectiveness.<sup>[2]</sup>

Unlike chemical shampoos, herbal shampoos are generally mild, biodegradable, and environmentally safe. They aim not only to cleanse the hair but also to provide additional benefits such as improved texture, natural shine, reduced hair fall, and long-term scalp nourishment. Their increasing popularity is also attributed to the global trend toward natural cosmetics, safety, sustainability, and holistic well-being.<sup>[3]</sup>

In pharmaceutical and cosmetic sciences, the formulation of herbal shampoos involves selecting suitable herbs, extracting their active constituents, and combining them with natural surfactants and stabilizers to create an effective and stable product. Scientific evaluation parameters such as pH, foam ability, detergency, viscosity, solid content, stability studies, and skin irritation tests are essential to ensure the quality, efficacy, and safety of herbal shampoo formulations.<sup>[4]</sup>

Thus, herbal shampoos represent a promising alternative to chemical-based hair cleansers, combining traditional knowledge with modern formulation techniques. As consumer awareness and demand continue to

grow, further research and standardization of herbal extracts are needed to enhance their effectiveness, consistency, and global acceptance.

## **History and Importance of Herbal Cosmetics**

Herbal cosmetics have been used since ancient times, with their origins rooted in traditional medical systems such as Ayurveda, Unani, and Siddha. Historical texts like the Charaka Samhita and Sushruta Samhita mention various plant-based preparations for cleansing, beautification, and hair care. In ancient India, natural ingredients such as Amla, Shikakai, Reetha, Neem, Hibiscus, and Bhringraj were commonly used to wash and nourish hair. These herbal remedies were valued not only for their cleansing ability but also for their therapeutic properties such as strengthening hair roots, preventing dandruff, and promoting hair growth.<sup>[5]</sup>

Across other civilizations—Egyptian, Chinese, and Greek cultures—herbs and natural oils were also incorporated into beauty rituals. Historically, cosmetics were made with simple, plant-based ingredients and were considered safe, holistic, and highly effective.

In the modern era, the demand for herbal cosmetics has increased significantly due to growing awareness about the harmful effects of synthetic chemicals found in many commercial products. Consumers now prefer herbal formulations because they are mild, biodegradable, non-toxic, eco-friendly, and provide additional health benefits beyond basic cleansing. Herbal cosmetics play a vital role in today’s personal care industry as they combine traditional knowledge with scientific research to create effective, safe, and naturally derived products.

The importance of herbal cosmetics lies in their therapeutic value, minimal side effects, and suitability for long-term use. In hair care, herbal shampoos are especially significant because they offer natural cleansing using plant-derived surfactants like saponins while also strengthening and conditioning the hair. As a result, herbal cosmetics continue to be a preferred and reliable choice for maintaining healthy skin and hair.<sup>[6]</sup>

### **Common herbs used in preparation**

Herbal shampoos mainly rely on plant extracts rich in natural surfactants, antioxidants, vitamins, and conditioning agents. These herbs not only cleanse the hair but also provide therapeutic benefits such as strengthening, anti-dandruff action, and hair growth promotion.<sup>[7]</sup>

Amla (*Emblica officinalis*) Rich in Vitamin C and antioxidant Strengthens hair roots and prevents hair fall



Enhances hair shine and prevents premature greying Acts as a conditioning and nourishing agent Shikakai (*Acacia concinna*) Natural mild cleanser with low pH Contains saponins that produce gentle foam Prevents hair dryness and detangling issues. Traditionally called “fruit for the hair”

#### 1. Reetha / Soapnut (*Sapindus mukorossi*)

Contains natural saponins (natural surfactants) Produces rich foam without harsh chemicals Removes excess oil and dirt effectively Suitable for sensitive scalp



## 2. Neem (*Azadirachta indica*)

Strong antimicrobial and antifungal agent Effective against dandruff and scalp infections Reduces itchiness and inflammation Promotes healthier scalp environment



## 3. Aloe vera (*Aloe barbadensis*)

Rich in vitamins, enzymes, and polysaccharides  
Provides intense moisture and conditioning Soothes irritated scalp Helps reduce hair breakage



## 4. Hibiscus (*Hibiscus rosa-sinensis*)

Known for promoting hair growth  
Forms natural mucilage that conditions hair Prevents dryness and makes hair soft Enhances natural shine



Bhringraj (Ecliptaalba) Known as “King of Hair” in Ayurveda Prevents hair fall and premature greying.



Strengthens the hair follicle Promotes dense and healthy hair

Brahmi (Bacopa monnieri) Improves scalp circulation Reduces dryness and split ends Strengthens roots and nourishes scalp Helps reduce stress-related hair fall

**Fenugreek (Trigonella foenum-graecum) Rich in proteins and lecithin**

Prevents dandruff and dryness

Adds softness and improves hair texture Helps in reducing hair fall

**Green Tea (Camellia sinensis)**

High in antioxidants and polyphenols Reduces hair shedding Helps control oiliness Promotes stronger hair growth

### **Formulation of Herbal Shampoo.**

The formulation of an herbal shampoo involves the selection of suitable herbal extracts along with other essential ingredients such as surfactants, conditioners, thickeners, preservatives, and pH adjusters. The goal is to create a mild, effective, and stable product that cleanses the hair while providing therapeutic benefits from natural herbs.<sup>[8]</sup>

#### 1. Basic Components of Herbal Shampoo Formulation Herbal Extracts (Active Ingredients)

These provide the main therapeutic and cleansing properties. Common herbal extracts used:

Amla extract Shikakai extract

Reetha extract (natural saponin) Neem extract Aloe vera gel Hibiscus extract

Bhringraj & Brahmi extract

Function: Nourishment, cleansing, conditioning, anti-dandruff action, hair growth benefits.

#### Surfactants (Cleansing Agents)

In herbal shampoos, the surfactant can be: Natural saponins (from Reetha/Soapnut) Mild synthetic surfactants like SLS-free bases (if used in combination). Function: Foam formation, removal of dirt and oil

#### Conditioning Agents

These improve the hair texture and softness. Examples:

Aloe vera

Polyquaternium compounds (mild) Herbal mucilage (Hibiscus, Fenugreek) Function: Smoothness, manageability, shine.

#### Thickening Agents

Used to adjust the viscosity of shampoo. Examples: Xanthan gum Carbopol Guar gum Hydroxyethyl cellulose (HEC)

Function: Enhances texture, prevents runny consistency.

#### Preservatives

Essential to prevent microbial growth. Examples: Sodium benzoate Potassium sorbate

Natural preservatives like neem oil or grapefruit seed extract Function: Improves shelf-life and product stability.

#### F. pH Modifiers

Used to maintain pH between 5.5–6.5, which is ideal for hair and scalp. Examples: Citric acid (to reduce pH) Sodium hydroxide (to increase pH)

#### H. Fragrance and Color

Usually natural essential oils and herbal colorants.

#### Examples:

Lavender oil Lemon oil Natural brown or green tones from herbal extracts Function: Enhances aesthetic appeal and user acceptance.

3. Ideal Characteristics of a Good Herbal Shampoo Mild cleansing without harsh chemicals Stable foam pleasant fragrance Balanced pH (5.5–6.5) Easily washable

### **Method of Preparation of Herbal Shampoo**

The preparation of herbal shampoo involves the careful combination of herbal extracts, surfactants, conditioners, and other additives to produce a stable, effective, and cosmetically acceptable product. The process can vary depending on the type of formulation (aqueous, gel- based, or liquid shampoo), but the general steps are as follows:<sup>[9]</sup>

#### 1. Extraction of Herbal Ingredients

Fresh or dried herbs (e.g., Amla, Shikakai, Reetha, Neem, Hibiscus) are selected. Methods of extraction: Aqueous extraction: Boiling herbs in water to obtain herbal decoctions Ethanol extraction:

Using ethanol for better solubility of certain phytoconstituents. Cold maceration Soaking herbs in water or suitable solvents at room temperature to preserve sensitive compounds.

The extract is filtered to remove solid residues, yielding a clear herbal solution.[10]

#### Preparation of Surfactant Base

If natural saponins (like Reetha) are used, the extract itself may act as the surfactant. For mild shampoos, SLS-free surfactants can be blended with the herbal extract to improve foam and cleansing.

Surfactants are gently mixed with water or herbal decoction at low to medium speed.

#### Incorporation of Conditioning Agents

Herbal mucilages (e.g., Hibiscus, Aloe vera) or commercial natural conditioners are added.

They improve hair texture, softness, and manageability. Mixing should be slow to avoid breaking the foam or damaging sensitive ingredients.<sup>[11]</sup>

#### Addition of Thickening Agents

Thickeners like Xanthan gum, Guar gum, or Carbopol are added to adjust viscosity. The mixture is stirred continuously to avoid lump formation.

Adequate hydration time is given for uniform viscosity.

#### H Adjustment

The pH of the formulation is checked using a pH meter. Adjusted to 5.5–6.5 (ideal for scalp) using: Citric acid to lower pH Sodium hydroxide to increase pH

#### Addition of Preservatives and Fragrance

Preservatives like sodium benzoate or potassium sorbate are added to prevent microbial growth. Essential oils or herbal fragrances are incorporated to improve sensory appeal

#### Homogenization and Filtration

The final mixture is homogenized to achieve a smooth, uniform consistency. The shampoo may be filtered to remove any remaining particulate matter.

### **Packaging**

The herbal shampoo is filled into clean, sterilized containers (bottles or tubes). Stored in cool, dry conditions to maintain stability and shelf-life.

## **Evaluation Parameters of Herbal Shampoo**

Evaluation of herbal shampoo is essential to ensure its quality, safety, efficacy, and consumer acceptability. Various physical, chemical, and microbiological tests are performed to standardize the product.<sup>[12]</sup>

### **Physical Evaluation**

**Appearance:** Should be smooth, homogeneous, and free from lumps or sediment.

**Color:** Natural or uniform color depending on herbal extracts; free from artificial discoloration. **Odor/Fragrance:** Pleasant and consistent with the added essential oils or herbal aroma.

**Clarity:** Should be free from turbidity or unwanted particles

### **Physicochemical Evaluation**

**pH Measurement:** Ideal shampoo pH: 5.5–6.5 (matches scalp's natural pH). Checked using a calibrated pH meter

### **Viscosity:**

Determines ease of application and flow from the container. Measured using a viscometer.

### **Foaming Ability and Foam Stability:**

Indicates cleansing efficiency.

Evaluated by shaking a fixed volume and observing foam formation and stability.

### **Dirt Dispersion Test:**

Assesses shampoo's ability to remove dirt and oil from hair surface.

### **Wetting Time:**

Measures the time taken for hair strands to get wet; shorter wetting time indicates better cleansing ability.

### **Solid Content:**

Determines the concentration of non-volatile matter in shampoo; affects viscosity and foaming.

### **Surface Tension:**

Indicates detergent efficiency. Measured using a tensiometer.

### **Microbiological Evaluation**

**Preservative Efficacy Test:**

Ensures the formulation resists microbial contamination during storage.

### **Microbial Load Test:**

Confirms that shampoo is free from pathogenic bacteria and fungi.

### **Irritation and Safety Tests**

### **Patch Test on Skin:**

Checks for allergic reactions or irritation on sensitive skin.

### **Eye Irritation Test (if required):**

Ensures the product is mild and safe for accidental eye contact.

### **Stability Studies**

Evaluates the shelf-life of herbal shampoo. Parameters monitored:

Color, odor, pH, viscosity, and microbial contamination under different temperature conditions. Ensures product maintains efficacy and safety during storage.

Consumer Acceptability Tests

Sensory evaluation by volunteers to check: Foam formation

Hair feel after washing, Ease of rinsing, Overall satisfaction

### **Conclusion of Evaluation:**

These evaluation parameters ensure that herbal shampoos are safe, effective, cosmetically acceptable, and stable, providing the intended benefits of cleansing, conditioning, and hair nourishment.

## **Marketed Herbal Shampoos**

Herbal shampoos are widely available in the market today due to growing consumer demand for natural and chemical-free hair care products. Many well-known brands have introduced herbal formulations

that combine traditional herbal knowledge with modern cosmetic technology. These shampoos are designed to provide cleansing, conditioning, hair strengthening, anti-dandruff action, and scalp nourishment.<sup>[13]</sup> Himalaya Anti-Hair Fall

Herbal Shampoo Key Ingredients: Bhringraj, Amla, Chickpea extract

Benefits: Reduces hair fall, strengthens hair roots, maintains scalp health

Features: Free from parabens and SLS, gentle on scalp Popularity: Widely used for hair fall control and daily hair care

Khadi Natural Amla & Bhringraj Shampoo Key Ingredients: Amla, Bhringraj, Shikakai, Aloe vera

Benefits: Promotes hair growth, prevents premature greying, nourishes scalp Features: SLS- and paraben-free, Suitable for long hair. Popularity: Popular among users preferring Ayurvedic and natural products

Kesh Kanti Herbal Shampoo

Key Ingredients: Amla, Bhringraj, Reetha, Aloe vera

Benefits: Strengthens hair, reduces dandruff, improves hair shine Features: Mild herbal cleansing, chemical-free



Popularity: Known for affordability and traditional herbal formulation

### **Dabur Vatika Enriched Herbal Shampoo**

Key Ingredients: Amla, Reetha, Henna, Aloe vera, Coconut oil

Benefits: Prevents hair damage, adds shine and softness, strengthens hair Features: Natural herbal formulation, suitable for daily use

### **Biotique Bio Kelp Protein Shampoo**

Key Ingredients: Kelp, Reetha, Shikakai, Aloe vera

Benefits: Cleanses hair naturally, reduces hair fall, nourishes scalp Features: Free from harmful chemicals, protein-rich formula Herbal Essences Bio: Renew Shampoo (Botanical Extracts) Key Ingredients: Aloe vera, Sea kelp, Green tea

## Summary of key findings

Safe for Skin & Scalp – Non-irritant and hypoallergenic in patch tests. Eye-Safe – Does not cause redness or irritation on accidental contact.

Microbiologically Safe – Free from harmful bacteria, fungi, and yeast. Non-Toxic – Shows no significant toxicity in acute or sub-acute studies. Herbal Ingredients Safe – Active plant extracts are within safe concentrations. Stable Formulation Maintains pH, color, fragrance, and quality during shelf-life. Regulatory Compliant – Meets cosmetic safety and quality standards

### Result

1. Reduced Hair Fall
2. Ingredients like amla, bhringraj, and aloe vera help strengthen hair roots and reduce breakage. Less Dandruff
3. Neem and tea tree help control dandruff and scalp infections. Soft & Smooth Hair
4. Natural oils and plant extracts improve hair texture without harsh chemicals. Shiny Hair
5. Regular use can give natural shine. Healthy Scalp
6. Herbal ingredients maintain scalp pH
7. Ingredients (Natural Focus)
8. How many natural/herbal ingredients does it contain (e.g., neem, aloe vera, amla, shikakai)? No
9. .Is the scent pleasant, mild, and plant-based? Not too artificial or overpowering? Lather & Texture
10. Does it foam adequately (but not excessively)? Is the texture smooth and easy to apply?

### Discussion:

Definition:

Herbal shampoos are hair care products made from natural plant extracts, free from harsh chemicals like sulfates, parabens, and siliconess <sup>[14]</sup>

### **Common Herbs Used:**

Aloe vera – moisturizes scalp, reduces irritation Neem – anti-dandruff, antibacterial

Amla – strengthens hair, promotes growth Bhringraj – prevents hair fall, improves shine Shikakai – natural cleanser, adds softness <sup>[15]</sup>

Benefits:

### **Gentle on scalp and hair**

Reduces dandruff and scalp infections Strengthens hair and reduces hair fall Maintains natural hair texture and shine

Formulation & Types: Liquid, cream, or powder form

Often includes essential oils, herbal extracts, and mild surfactants

### **Evaluation Parameters:**

pH, foam formation, viscosity, stability, cleansing efficiency

### Market Trend:

Increasing demand due to awareness of chemical-free products.

Consumers worldwide increasingly prefer shampoos with botanical extracts like aloe vera, neem, amla, hibiscus, bhringraj, tea tree oil, etc., over chemical-laden formulas. Natural ingredients are perceived as gentler and safer for both hair and scalp. ♦

### Conclusion :

Herbal shampoos are safe and natural alternatives to chemical-based hair care products. They effectively cleanse the hair while providing nourishment and protection due to the presence of herbal extracts like amla, neem, bhringraj, aloe vera, and shikakai. Regular use strengthens hair, reduces hair fall, prevents dandruff, and maintains scalp health without harmful side effects. With growing awareness of natural and chemical-free products, herbal shampoos are gaining popularity in the market. They combine the benefits of traditional herbal remedies with modern hair care needs, making them a preferred choice for healthy and shiny hair.<sup>[16]</sup>

### Future prospects :

Herbal shampoo market is growing globally and in India due to rising demand for natural, chemical-free hair care. Products are evolving with personalized formulas, eco-friendly packaging, and online availability.<sup>[17]</sup> Strong cultural preference and awareness support long-term growth despite higher ingredient costs.<sup>[18]</sup> Expected to become a mainstream, preferred choice in hair care in the coming years.<sup>[19]</sup>

### Acknowledge :

Herbal herbs (like amla, bhringraj, neem, aloe vera) have biologically active components that can strengthen hair roots, condition hair, and improve scalp health. But scientific proof is often limited, and many studies are small or not industry-wide standardized. Herbal shampoo is a hair care product formulated using natural plant-based ingredients instead of harsh synthetic chemicals. It typically contains extracts from herbs such as aloe vera, neem, hibiscus, amla, shikakai, bhringraj, and reetha, which are traditionally known for their nourishing and cleansing properties. These ingredients work together to gently cleanse the scalp, remove excess oil and dirt, and strengthen the hair from root to tip. Unlike many chemical-based shampoos, herbal shampoos are often free from parabens, sulfates, and artificial fragrances, making them a preferred choice for individuals who seek a more natural and holistic approach to hair care. Their mild formulation helps maintain the natural moisture balance of the scalp while promoting healthy hair growth.

Regular use of herbal shampoo can improve overall hair texture, reduce dandruff, control hair fall, and add natural shine. The presence of herbal extracts provides essential nutrients, antioxidants, and vitamins that help repair damaged hair and soothe scalp irritation. Many herbal shampoos are suitable for all hair types, including dry, oily, and sensitive scalps, because they are less likely to cause allergic reactions or excessive dryness. In addition, herbal shampoos are often considered environmentally friendly since they rely on biodegradable ingredients and minimal chemical processing. By choosing herbal shampoo, consumers not only support healthier hair but also contribute to sustainable and eco-conscious personal care practices.

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