

## Preparation and Evaluation of Herbal Shampoo for Dandruff and Hairfall

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### ABSTRACT

The increasing inclination towards natural alternatives has resulted in the innovation of herbal shampoos addressing all hair and scalp concerns- be it regarding Hairfall or Dandruff!! Abstract The present study deals with the preparation and assessment of herbal shampoo based on all plant ingredients which are historically used in various parts of world for hair growth promotion. Removing the scalp water, nature extracted a mixture of Aloe vera with worst performing level of neem and bhringraj for dandruff fighting and hair strengthening. Keratoplast was prepared by extracting bioactives from these herbs and loaded into surfactant base thereby making it effective cleansing. The formulation was extensively tested for its pH, viscosity and stability studies over a specified time. the shampoo was subjected to microbiological testing that showed it is safe as well as effective. A clinical trial has been carried out on subjects suffering from hair fall and dandruff. Results: Parameters of hair density, scalp condition and dandruff severity were graded before & after usage of herbal shampoo. In conclusion, this study postulates that the herbal shampoo substantiates good quality and safety values along with promising natural remedy for hair fall and dandruff. Future research may wish to explore the longer-term gains and possible improvements in formulation.

**KEYWORD:** Herbal Shampoo, Dandruff Aloe vera, Hairfall, Hair care, Plant Hair Treatment

### INTRODUCTION

The Sanskrit word "chapyati," which meaning "to soothe," is the source of the Hindi word "champo," which is where the word "shampoo" originates. Herbal shampoo appears to have started in the Indian subcontinent, when various ayurvedic extracts were employed. A Bengali businessman and traveller brought the concept of "champo" or "Shampooing" to Britain in the 1800s. Later, a combination of shaving soap and natural herbs was cooked in water and

used to wash hair in England. People use herbal shampoo to take care of their hair because this is really harmful and dangerous for humans. People are utilizing herbal shampoo more often than chemical shampoo because they are becoming more cautious about using goods that include chemicals.

Shampoos are probably used similarly to cosmetics on the skin. We use it as a regular hair care product to keep our scalp and hair clean. The most prevalent application of shampoos, which are viscous solutions of detergents with suitable additives, preservatives, and active ingredients, is as cosmetics. Usually, following application, it is massaged into damp hair, and the hair is cleansed by running water over it. Shampoo works to remove trapped dirt and debris from hair without significantly lowering sebum production. Both medicated and nonmedicated synthetic shampoos are presently widely available on the market. But because it is safer, comes from a natural source, increases client demand, and has no unfavourable side effects, herbal shampoo has grown in popularity.

Numerous examples from all artistic genres demonstrate the special significance that people have given to hair across practically all times and cultures. Using many brands or types of shampoo is a fad these days. Shampoo is utilized these days for many different things, such curing anti-dandruff, strengthening hair, and regulating hair fall. Consequently, shampoo is now used to cure a variety of issues rather than only cleaning hair. Shampoo is used for cosmetics (own) Because many medicinal herbs are thought to have therapeutic effects for hair, they are frequently included in shampoo formulations. You can use these plant materials as raw materials, powders, derivatives, and refined extracts.

Herbal shampoos are cosmetic preparations that, like conventional shampoos, are designed to cleanse the hair and scalp by utilizing traditional ayurveda herbs. They are employed to get rid of grease, dandruff, pollutants in the

environment, etc. article Making natural shampoo is a really challenging task. Shampoo is a polyherbal concoction made of amla

The scientist employed these plants to make shampoo after selecting them using a traditional method. For millennia, the Indian folklore system has employed the pericarp of *Spindusmukorossi*, also known as soapnut or reetha, the fruits of *Phyllanthus emblica*, also known as Amla, and the dried pods of *Acacia cincinnal* (Sheekakai) to wash hair (Kapoor, 2005). Because Reetha and Sheekakai have a high saponin content, they create a thick lather when shaken with water. Additionally, they have been shown to have positive effects on the skin and other

organ systems. The amla in this plant has a high vitamin C content, which gives it sustenance and vigor and encourages hair development. They are anti-dandruff agents. Herbal hibiscus is utilized as a conditioning agent and hair booster; reetha (soapnut) is a forming agent.

**HAIR FALL:** Hair fall is the thinning of the scalp's hair. Hair loss is referred to as alopecia, and it can be either temporary or permanent. Among all patients, hair loss is the most prevalent issue. Numerous factors, including an unhealthy (low protein, for example), excessive colourings and style, physical stress, a vitamin B deficiency, a amounts



FIG 1 HAIR LOSS

*Emmerica officinalis* (amla) is one of several hair growth stimulants that may be utilized to address this issue.



Fig 2: ALOPECIA

**Anti-dandruff:** Almost half of the post-pubertal population, regardless of sex or race, suffers from dandruff, a common scalp condition. It itches quite a bit. It is commonly known that during the development of dandruff, keratinocytes are essential for the expression and induction of immune responses. While dandruff frequently gets

worse in the winter, its severity might vary depending on the season. Specialty shampoos are effective in treating the majority of dandruff problems. Dandruff sufferers discover that their condition can lead to social or self-esteem issues, indicating a need for both psychological and medical intervention.



Fig 3: - Amla, Reetha, Shikakai

Shikara, or *Acacia concinna* in the Mimosaceae family, is a common shrub across the plains of central and southern India. In literal terms, shikakai means "fruit of hairs." It works well as an astringent, natural hair cleaner, and detangler. It strengthens hair, encourages hair development, gets rid of dandruff, and is used to shampoos and soaps for washing hair.

So People stay away from chemical shampoos as they can lead to dry scalp, which can result in dandruff in the hair. Thus, amla and shikakai are used in herbal shampoos because they both have antidandruff properties. Shikakai has the ability to nourish the shaft and scalp, while amla has the ability to quickly eliminate.



Fig. 4: Scalp dandruff

**Hair growth promoters:** Hibiscus may increase hair length by stimulating hair growth. Both the leaves and petals of Hibiscus sativus are good for

hair development since they feed the hairs. Hibiscus contains flavonoids and is high in vitamin C.



Fig5 :Hibiscus

### **FUNCTIONS OF HERBAL SHAMPOO**

1. It provide Lubrication
2. they provide Conditioning to hairs
3. enhance the growth of hair
4. Upkeep and guard against graying hairs
5. Offer resilience

### **DESIRED PROPERTIES OFN HERBAL SHAMPOO :**

1. Ease of application
2. Detangling
3. Fragrance
4. Low level of irritation
5. Ease of preservation
6. Robustness

### **ADVANTAGES OF HERBAL SHAMPOO**

1. Pure and Organic Ingredient
2. They are Free from Side Effects
3. No Surfactants e.g.:- SLS
4. Synthetic additives used very less amount or may not used
5. No show harmful effect

### **WHAT IS HAIR**

The content of "hair" itself, as a topic, isn't subject to copyright because it's a general concept and not a specific, original piece of writing or intellectual property. However, specific texts or descriptions about hair that are authored by individuals or published in materials might be copyrighted if they are original and creative.

If you need information about hair that's paraphrased to avoid any potential issues with copyright, you might rephrase the description in a new way while keeping the core facts intact. For example, instead of directly copying a description of hair, you could say:

"Hair is a natural extension of the skin, made up of a protein called keratin. It grows from follicles in the skin and serves various roles, including protecting the body and helping regulate temperature. The structure of hair includes the cuticle (outer layer), the cortex (middle layer with color and strength), and sometimes the medulla (central core). Each hair goes through a growth cycle consisting of phases where it grows, rests, and eventually falls out."

### **METHOD :**

#### **Preparation of Extract:**

We utilized 100 grams of powdered plant material from the following plants: Euphorbia prostrata, Aloe barbadensis, Acacia concinna, Emblica officinalis, Hibiscus rosa-sinensis, and Clitoria ternatea. After four hours of boiling in distilled water, these granules were removed. After that, the extracts were divided and evaporated. To ensure that your process for preparing, formulating, and evaluating a herbal shampoo is both original and free from copyright or plagiarism concerns, it's crucial to rely on general methods and create your own unique formulation. Below, I provide a step-by-step guide that avoids direct copying and encourages originality.

#### **Preparation of Herbal Extracts**

**Objective:** Extract active compounds from herbs known for their benefits in addressing hairfall and dandruff.

**Materials Needed:** Dried herbal material (e.g., neem leaves, aloe vera, hibiscus flowers) Solvent (e.g., water, alcohol) Equipment (e.g., blender, strainer, glass jars, heat source)





**FIG 6: HERBAL EXTRACT**

**Methods:(Procedure)**

1. **Herbal Infusion:**Boil water and pour it over the dried herbs in a heat-resistant container. Steep for 10-15 minutes.

- Filtration: Strain the mixture using a fine mesh strainer or cheesecloth. Store the liquid in a clean, airtight container.

- Application:Use this infusion as part of the water phase in your shampoo formulation.








2. **Herbal Decoction:** -Procedure:Simmer dried herbs in water for 30-60 minutes, reducing the liquid by about half.

Filtration: Strain through a fine sieve or cheesecloth. Cool and store the extract.Application: Incorporate the decoction into the shampoo base for more concentrated benefits.

3. **Herbal Tincture:**Procedure: Soak dried herbs in alcohol (e.g., ethanol) for 2-4 weeks, shaking occasionally.

Filtration: Strain the mixture through cheesecloth or a coffee filter. Store in a dark glass bottle.

Application: Add a few drops of tincture to the shampoo formulation for concentrated effect

S. No.	Common name	Pictures	Botanical name	Parts used	Category
1	Hibiscus		<i>Hibiscus rosa-sinensis</i>	Flower	Conditioning agent
2	Amla		<i>Emblica officinalis</i>	Fruit	Anti-dandruff agent
3	Shilajal		<i>Acacia concinna</i>	Powder	Detergent
4	Soapnut		<i>Sapindus indica</i>	Fruit	Detergent
5	Cassia		<i>Cassia auriculata</i>	Leaves	Anti-dandruff agent
6	Bhringraj		<i>Eclipta prostrata</i>	Leaves, flower	Hair growth
7	Aloe vera		<i>Aloe barbadensis</i>	Leaf	Coolant

**FIG7 . BOTANICAL NAMES**

### ➤ **Formulation of Herbal Shampoo**

Objective: Combine the base shampoo ingredients with herbal extracts to create an effective product.

Base Ingredients:

- Surfactants: Gentle cleansers like Sodium Coco-Sulfate or Coco Glucoside.
- Conditioning Agents: Hydrolyzed silk proteins or Panthenol.
- Thickeners: Natural gums like Xanthan or Guar gum.
- Preservatives: Phenoxyethanol or Ethylhexylglycerin.
- Fragrance: Essential oils (e.g., lavender, rosemary) for a pleasant scent.

### ➤ **Procedure:**

1. Mix Base Ingredients:

- Combine surfactants, conditioning agents, and thickeners in a clean mixing container.
- Heat slightly if necessary (follow surfactant manufacturer guidelines).

2. Incorporate Herbal Extracts:

- Gradually add prepared herbal extracts (infusion, decoction, tincture) to the base mixture.
- Blend thoroughly to ensure even distribution of extracts.

3. Adjust pH:

- Use a pH meter or test strips to ensure the pH is between 4.5 and 5.5. Adjust with citric acid or sodium hydroxide if needed.

4. Add Preservatives and Fragrance:

- Incorporate preservatives according to recommended concentrations.
- Add a few drops of essential oils for fragrance.

5. Blend and Homogenize:

- Mix until a homogeneous solution is achieved. Ensure no lumps or separation occurs.

### **3. Evaluation of Herbal Shampoo**

Objective: Assess the effectiveness, stability, and safety of the shampoo.

Testing Procedures:

1. Physical Testing

- Appearance: Check color, clarity, and consistency.
- pH Level: Confirm pH is within the acceptable range.
- Viscosity: Measure the thickness using a viscometer.

2. Performance Testing:

- Lathering: Evaluate the shampoo's foaming ability.
- Cleansing Efficiency: Test how well it removes oil and dirt.
- Conditioning: Assess the feel and manageability of hair after use.

3. Stability Testing:

- Storage: Test samples under different conditions (e.g., high temperature, light exposure).
- Shelf Life: Monitor changes in the product over time.

4. Sensory Evaluation:

- User Feedback: Collect data from volunteers regarding hair and scalp condition.
- Dermatological Testing: Ensure there are no adverse reactions or irritations.

### **Ingredients selection**

1. Selection of Ingredients: - Herbs for Hair Loss: Consider ingredients like Horsetail, Fenugreek, Amla (Indian gooseberry), Bhringraj, and Amla. These herbs are well known for their ability to fortify hair and encourage growth. - Herbs for Dandruff: Ingredients like neem, tea tree oil, rosemary, and aloe vera work well to treat dandruff. 2. Base - Choose a shampoo base or surfactant that works well with herbal components, such as sodium lauryl sulphate (SLS) or sodium coco-sulfate.

3. Formulation Procedure - Preparation of Extracts: Soak plants in a solvent (such as water or alcohol) and then filter. - Blending Combine the herbal extracts with the shampoo's foundation. Be careful to blend the mixture to create a homogeneous mixture

5. Efficacy Testing

- Hairfall Reduction: Observe and document improvements over a period.
- Dandruff Reduction: Evaluate the reduction in dandruff with consistent use.

1. Easy to apply

2. Detangle

3. Fragrance

4. Low Level of irritation

5. Easy to preserve

### **DESIRED PROPERTIES OF HERBAL SHAMPOO**

#### **SKIN REACTIONS**

##### **1. Testing for Skin Reactions:**

- Patch Testing: Conduct patch tests by applying a small amount of the shampoo to a limited area of skin on a group of volunteers. Monitor these areas for any adverse reactions over a period of 24-48 hours.

##### **2. Assessing Ingredient Safety:**

Ingredient Review Verify the safety of all components by consulting safety databases like the

Cosmetic Ingredient Review (CIR) or other relevant regulatory sources.

Allergen Check: Ensure the formula is free from common allergens and irritants, especially if the shampoo is targeted at sensitive skin.

### 1. Documentation:

-Collect Testing Data: Assemble all results from skin irritation tests and ingredient safety reviews.

- Adjust Formulation: Modify the formulation if needed based on testing feedback and safety evaluations.

Prepare Reports: Document the final formula, testing methods, results, and any adjustments made. This will be crucial for regulatory compliance and quality assurance.

Here's a rewritten version of the content to ensure originality and avoid copyright issues:

### 2.Regulatory compliance :

**VERIFY LOCAL REGULATIONS:**Ensure the product complies with local cosmetic regulations, including any restrictions on ingredients, labeling protocols, and packaging guidelines.

**SECURE CERTIFICATIONS**Obtain necessary certifications, such as organic or cruelty-free, and complete any mandatory third-party testing or validation.

### FINAL PREPARATIONS

**IMPLEMENT QUALITY CONTROL:**Establish a robust quality control system to guarantee consistent quality and safety throughout the production process.

**DESIGN PACKAGING AND LABELS:**Develop packaging and labels that meet regulatory standards and clearly communicate the product's benefits and usage instructions.

By following these steps, you can create a herbal shampoo that is not only effective and safe but also adheres to industry standards, ensuring a successful product launch.

### **DESIRED PROPERTIES OF HERBAL SHAMPOO:**

**EASE OF APPLICATION:** The shampoo should be easy to apply and spread through the hair.

**DETANGLING:** It should help in detangling hair.

**PLEASANT FRAGRANCE** The product should have a pleasant and appealing scent.

**LOW IRRITATION POTENTIAL:** The shampoo should be gentle and minimize irritation to the scalp and skin.

**EASE OF PRESERVATION:**The product should be easy to preserve, maintaining its effectiveness over time.

**GOOD STABILITY:**The shampoo should remain stable under various conditions, preventing separation or degradation.

### Functions of Herbal Shampoo:

- **LUBRICATION:** Provides lubrication to hair, making it easier to manage.

**CONDITIONING:CONDITIONS** the hair, improving texture and smoothness.

- \*Hair Growth Enhancement: Helps promote healthy hair growth.

**HAIR PROTECTION** Protects hair from premature graying and environmental damage.

**STRENGTHENING:** Strengthens the hair, reducing breakage and shedding.

### Advantages of Herbal Shampoo:

**PURE AND ORGANIC INGREDIENTS:** Made with natural ingredients, ensuring purity.

**FREE FROM SIDE EFFECTS:** The product is gentle and unlikely to cause adverse reactions.

**NO HARSH SURFACTANTS:**Does not contain harsh surfactants like SLS, which can strip hair of natural oils.

**MINIMAL SYNTHETIC ADDITIVES:** Uses little to no synthetic additives, focusing on natural formulations.

**NON-IRRITATING:**Gentle on the skin, reducing the risk of irritation.

### REFERENCES

- [1]. Saripalla DD, Khokhani ND, Kamath A, Rai RP, Nayak S. Organoleptic and physicochemical properties of natural-based herbal shampoo formulations with Cycleapeltata as a key ingredient. Journal of Cosmetic Dermatology. 2022 Apr;21(4):1666-74.
- [2]. Lodha G. Formulation and evaluation of polyherbal shampoo to promote hair growth and provide antidandruff action. Journal of Drug Delivery and Therapeutics. 2019 Aug 30;9(4-A):296-300
- [3]. Al Badi K, Khan SA. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos. Beni-Suef University Journal of Basic and Applied Sciences. 2014 Dec 1;3(4):301-5.
- [4]. Lodha G. Formulation and evaluation of polyherbal shampoo to promote hair

- growth and provide antidandruff action. *Journal of Drug Delivery and Therapeutics*. 2019 Aug 30;9(4-A):296-300
- [5]. Al Badi K, Khan SA. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos. *Beni-Suef University Journal of Basic and Applied Sciences*. 2014 Dec 1;3(4):301-5.
- [6]. Prachi S, Sonal D. Preparation of herbello-an herbal antidandruff shampoo. *Research article biological science*. 2015 Apr;5:220-1.
- [7]. Potluri A, Harish G, Kumar BP. Formulation and evaluation of herbal antidandruff shampoo. *Indian Journal of Research in Pharmacy and Biotechnology*. 2013 Nov 1;1(6):835.
- [8]. Gupta A, Malviya R, Singh TP, Sharma PK. Indian medicinal plants used in hair care cosmetics: a short review. *Pharmacognosy Journal*. 2010 Jun 1;2(10):361-4.
- [9]. Sinclair RD. Healthy hair: what is it?. In *Journal of investigative dermatology symposium proceedings 2007 Dec 1 (Vol. 12, No. 2, pp. 2-5)*. Elsevier.
- [10]. Lodha G. Formulation and evaluation of polyherbal shampoo to promote hair growth and provide antidandruff action. *Journal of Drug Delivery and Therapeutics*. 2019 Aug 30;9(4-A):296-300.
- [11]. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos Khaloud Al Badi, Shah A. Khan Department of Pharmacy, Oman Medical College, Muscat, Oman *beni-suef university journal of basic and applied sciences 3 (2014) 301 e305*
- [12]. Kumari I, Sarkar I, Sanyashi I, Das S, Das R. Formulation and Evaluation of herbal shampoo using neem, amla and reetha extract. *Journal of Pharmacognosy and Phytochemistry*. 2022;11(4):179-84.
- [13]. Vijayalakshmi A, Sangeetha S, Ranjith N. Formulation and evaluation of herbal shampoo. *Asian Journal of Pharmaceutical and Clinical Research*. 2018;11(4):121-4.
- [14]. Dubey S, Nema N, Nayak S. Preparation and evaluation of herbal shampoo powder. *Ancient science of life*. 2004 Jul;24(1):38.
- [15]. Canadian University of Dubai An Examination of Female Consumer Preferences for Shampoo Brands in the United Arab Emirates
- [16]. Khanam US, Rahman MB. Preference of Global Shampoo Brands: A Study on Women Consumers. *Open Journal of Social Sciences*. 2022 Nov 1;10(12):241-54.
- [17]. Shete BR, Phule PN. A Study of Consumer Behaviour Towards Hair Care Product (Shampoo) in Nagpur. *ECS Transactions*. 2022 Apr 24;107(1):5459.
- [18]. Thilgavathi M, Indirapriyadharshini B. Consumer Buying Behaviour of Shampoo: With Reference to Women of Pollachi Taluk, Tamilnadu. *Journal of Commerce and Management Thought*. 2019;10(1):11-28.
- [19]. Khanam US, Rahman MB. Preference of Global Shampoo Brands: A Study on Women Consumers. *Open Journal of Social Sciences*. 2022 Nov 1;10(12):241-54.
- [20]. Gupta A, Malviya R, Singh TP, Sharma PK. Indian medicinal plants used in hair care cosmetics: a short review. *Pharmacognosy Journal*. 2010 Jun 1;2(10):361-4.
- [21]. Vijayalakshmi A, Sangeetha S, Ranjith N. Formulation and evaluation of herbal shampoo. *Asian Journal of Pharmaceutical and Clinical Research*. 2018;11(4):121-4.
- [22]. Moghimipour E, Jaseemnezhad M, Mohammad Soleymani S, Salimi A. Preparation and evaluation of a free surfactant herbal shampoo with *Acanthophyllum Squarrosium* Saponins. *Journal of Cosmetic Dermatology*. 2021 Jan;20(1):181-7.
- [23]. Vijayalakshmi A, Sangeetha S, Ranjith N. Formulation and evaluation of herbal shampoo. *Asian Journal of Pharmaceutical and Clinical Research*. 2018;11(4):121-4.
- [24]. Mehmood F, Shahzadi I, Waseem S, Mirza B, Ahmed I, Waheed MT. Chloroplast genome of *Hibiscus rosasinensis* (Malvaceae): comparative analyses and identification of mutational hotspots. *Genomics*. 2020 Jan 1;112(1):581-91.
- [25]. Vijayalakshmi A, Sangeetha S, Ranjith N. Formulation and evaluation of herbal shampoo. *Asian Journal of Pharmaceutical and Clinical Research*. 2018;11(4):121-4.
- [26]. Adhirajan N, Kumar TR, Shanmugasundaram N, Babu M. In vivo





- and in vitro evaluation of hair growth potential of *Hibiscus rosa-sinensis* Linn. *Journal of ethnopharmacology*. 2003 Oct 1;88(2-3):235-9.
- [27]. Staraceb RM, Piraccinib BM, Reis HD, Diasd G. Trichodynia Revisited.2021 11(4):121-4
- [28]. Kumari I, Sarkar I, Sanyashi I, Das S, Das R. Formulation and Evaluation of herbal shampoo using neem, amla and reetha extract. *Journal of Pharmacognosy and Phytochemistry*. 2022;11(4):179-84.
- [29]. Sinclair RD. Healthy hair: what is it?.In*Journal of investigative dermatology symposium proceedings 2007 Dec 1* (Vol. 12, No. 2, pp. 2-5). Elsevier
- [30]. Yuan H, Ma Q, Ye L, Piao G. The traditional medicine and modern medicine from natural products. *Molecules*. 2016 Apr 29;21(5):559.