

Herbal Shampoo: A Comprehensive Overview

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Abstract

Shampoo is a cosmetic product designed mainly to use surfactants to clean away grease, dirt, and skin flakes from hair safely when used as intended. Today, shampoo not only cleanses the hair and scalp, but also helps stimulate hair growth and reduce hair loss. To achieve these goals, the shampoo industry incorporates a range of chemical additives that may present risks to consumers. It also acts as a conditioning agent, performing all these functions without causing harm or damage to the hair. The shampoo was crafted using extracts from aloe vera, Hibiscus rosa-sinensis (hibiscus), Emblica officinalis (amla), Acacia concinna (shikakai), Sapindus indica (soapnut), Azadirachta indica (neem), Trigonella foenum-graecum (fenugreek seeds), and essential oils (lavender, tea tree, or rosemary). Evaluations of sensory characteristics. The result indicated that this product could serve as a suitable natural option for cleaning and caring of hair.

Keywords: Herbal shampoo, aloe vera, *Hibiscus rosa-sinensis* (hibiscus), *Emblica officinalis* (amla), *Acacia concinna* (shikakai), *Sapindus indica* (soapnut), *Azadirachta indica* (neem), *Trigonella foenum-graecum* (fenugreek seeds), essential oils (lavender, tea tree, or rosemary)

INTRODUCTION

Herbal Shampoo

Shampoos are likely the most used beauty products for cleaning hair and scalp in our everyday routine. Herbal shampoos are cosmetic formulations that utilize traditional ayurvedic herbs designed for cleaning the hair and scalp similarly to regular shampoo [1]. There are several allergic reactions associated with hair, such as a dry scalp and dandruff or flakiness, which can be treated with shampoos formulated for these issues, like hypoallergenic or ginger shampoo, etc.

Shampoos act as a cleansing agent and fall under the category of hair care products, helping to remove oils, dirt, environmental pollutants, dead skin cells, dandruff, and other impurities that build up in the hair [2, 3].

HISTORY

Indian Subcontinent

In the Indian subcontinent, various herbs and their extracts have been used as the earliest and most effective shampoos was made by boiling soapberries (*Sapindus*) with dried Indian gooseberry (*amla*) and other herbs, followed by straining the mixture [4]. Soapberries, known as Ksuna in local dialects, are tropical trees that grow across India [5]. In this study, a herbal shampoo was formulated using a variety of ingredients, such as *Hibiscus rosa-sinensis* (hibiscus), *Emblica officinalis* (amla), *Acacia concinna* (shikakai), *Sapindus indica* (soapnut), *Trigonella foenum-*

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graecum (fenugreek seeds), essential oils (lavender, tea tree, or rosemary), *Aloe barbadensis* (aloe vera), and *Azadirachta indica* (Neem) in different proportions to evaluate its physicochemical properties [6].

IDEAL PROPERTIES OF HERBAL SHAMPOO

Herbal shampoos are designed to offer efficient cleansing while preserving the health of both hair and scalp. For an herbal shampoo to be deemed optimal, it should fulfil several essential criteria:

Effectively Remove Dust and Excess Oil

An effective herbal shampoo must thoroughly cleanse the hair and scalp by eliminating built-up dust, dirt, and surplus sebum. Natural surfactants, like soapnut (reetha) and shikakai (*A. concinna*), are frequently utilized for their gentle yet potent cleansing abilities, ensuring the scalp stays clean without overly stripping natural oil [7].

Adequate Foam Production

The capacity to produce foam is a significant characteristic of shampoos, as it facilitates the ease of application and spreading throughout the scalp and hair. Herbal foaming agents, such as saponins from soapnut and yucca root extract create an adequate lather while being kinder than synthetic sulfates [8].

Hydration, Softness, and Shine

A perfect herbal shampoo should guarantee that hair stays hydrated, soft, and luminous following washing. Moisturizing ingredients, like aloe vera, hibiscus extract, and liquorice root, assist in retaining moisture, preventing undue dryness, and boosting natural shine. Moreover, herbal proteins from amla (*E. officinalis*) and fenugreek (*T. foenum-graecum*) fortify the hair structure and enhance manageability [9].

It Should Provide a Delightful Fragrance for the Hair

A balanced herbal shampoo ought to enhance hair texture, rendering it smooth and simple to detangle with minimal flyaways or frizz. Conditioning components, such as henna, bhringraj (*Eclipta alba*), and argan oil supply nourishment, diminishing static and averting tangles [10].

No Side Effects or Irritation to Skin and Eyes

Herbal shampoos must be safe for dermatological use, resulting in no irritation to the scalp, skin, or eyes. Aggressive synthetic chemicals, such as sulfates and parabens should be omitted, with herbal alternatives like chamomile and calendula extracts, recognized for their soothing anti-inflammatory characteristics, to be utilized instead [11].

COMPOSITION OF SHAMPOO

Herbal shampoos are formulated with both natural and synthetic ingredients to cleanse the hair and scalp while providing additional therapeutic benefits. The essential components of herbal shampoo include:

Principal Surfactant

The primary cleaning agent in shampoo, surfactants, helps to eliminate dirt, oil, and other impurities from the scalp and hair. Common natural surfactants present in herbal shampoos include soapnut (reetha), shikakai (*A. concinna*), and plant-derived saponins [12].

Secondary Surfactant

These surfactants enhance the cleansing action and increase the mildness of the shampoo. Herbal shampoos often feature gentle secondary surfactants, like decyl glucoside, cocamidopropyl betaine, and lauryl glucoside, which reduce irritation and improve foaming ability [13].

Anti-Dandruff Agents

Herbal shampoos contain plant-derived antifungal and antibacterial substances to tackle dandruff and scalp infections. Ingredients, such as neem (*A. indica*), tea tree oil, and aloe vera possess antimicrobial properties that assist in soothing scalp irritation and flakiness [14].

Conditioning Agents

Conditioning agents improve hair texture, manageability, and hydration. Herbal conditioning agents include hibiscus extract, amla (*E. officinalis*), and fenugreek (*T. foenum-graecum*), which nourish and strengthen hair strands while helping to prevent dryness and breakage [15].

Thickening Agents

These ingredients provide the shampoo with a desirable consistency and enhance its spreadability. Common herbal thickening agents include guar gum, xanthan gum, and aloe vera gel, which contribute viscosity without using synthetic polymers [16].

Colors, Perfumes, and Preservatives

Natural colorants, like henna extract and turmeric, are used to improve the visual appeal of herbal shampoos. Essential oils, such as lavender, rosemary, and lemongrass serve as natural fragrances while also offering therapeutic advantages. Natural preservatives, like grapefruit seed extract, citric acid, and vitamin E, help extend shelf life by preventing microbial contamination [17].

TYPES OF SHAMPOO

Liquid Shampoo

Liquid shampoos represent the most frequently used variety, made with surfactants, water, thickening agents, and conditioning components. These shampoos generate a rich lather, which simplifies application and rinsing. They can be further classified into:

Clarifying Shampoos

Created to eliminate excess oil, dirt, and product buildup on the scalp.

Moisturizing Shampoos

Include hydrating components to soften and smooth hair.

Sulfate-Free Shampoos

A milder option, free from harsh sulfates like sodium lauryl sulfate (SLS).

Color-Protecting Shampoos

Developed to avoid color fading and prolong the lifespan of hair dye [18].

SOLID CREAM SHAMPOO

Solid cream shampoos possess a thick, paste-like texture and are typically packaged in jars or tubes. These shampoos feature higher levels of cleansing and conditioning agents, making them suitable for dry or damaged hair. Benefits comprise:

Long-Lasting Formula

Necessitates a small quantity for each use.

Eco-Friendly Packaging

Generates less plastic waste in comparison to liquid shampoos.

Intensive Conditioning

Frequently enriched with nourishing oils and butter [19].

Jelly Shampoo

Commonly referred to as gel shampoos, these have a clear, jelly-like texture. They often include thickening agents like xanthan gum or cellulose derivatives. Key benefits encompass:

- *Lightweight Formula*: Does not burden hair.
- *Gentle Cleansing*: Perfect for sensitive scalps.
- *Enhanced Shine*: Leaves hair appearing glossy and smooth [20].

Powder Shampoo

Powder shampoos are available in dry form and are applied by sprinkling on the scalp, massaging, and subsequently brushing out. These shampoos are tailored for situations where water is inaccessible. Advantages include:

- *Water-Free Application*: Fit for travel and emergencies.
- *Oil Absorption*: Eliminates excess sebum from the scalp.
- *Volumizing Effect*: Provides hair with a fuller look [21]

Lotion Shampoo

Lotion shampoos, also known as liquid cream shampoos, are a blend between liquid and cream-based formulations. They have added opacifiers like glyceryl monostearate, lending them a milky look. Benefits include:

- *Balanced Cleansing*: Appropriate for normal hair types.
- *Mild Formulation*: Less severe than clarifying shampoos.
- *Easy Application*: Ensures a smooth, even application on the scalp [22].

Conditioning Shampoo

Conditioning shampoos, frequently labeled as 2-in-1 shampoos, merge cleansing agents with conditioning ingredients. These shampoos decrease the necessity for a separate conditioner by offering:

- *Hydration and Softness*: Keeps hair hydrated.
- *Time-Saving Formula*: Perfect for those who favor a one-step process.
- *Reduced Frizz*: Aids in controlling flyaways [23].

Antidandruff Shampoo

Anti-dandruff shampoos are crafted with active elements, like ketoconazole, zinc pyrithione, and selenium sulfide, to tackle dandruff and scalp irritation. Key advantages involve:

- *Fungal Control*: Limits fungi that cause dandruff.
- *Soothes Itchiness*: Alleviates discomfort on the scalp.
- *Prevents Flaking*: Contributes to maintaining scalp health.

MATERIALS AND METHODS

Materials

The components selected for the creation of herbal shampoo were chosen based on their historical usage and scientific validation of their advantages for hair care. The main components are listed in Table 1.

- Aloe vera (A. barbadensis Miller)*: Utilized for its hydrating and anti-inflammatory characteristics.
- Shikakai (A. concinna)*: A natural detergent that supports hair cleaning and scalp wellness.
- Reetha (S. mukorossi)*: Contains natural saponins that serve as a foaming and cleansing agent.
- Amla (P. emblica)*: Abundant in vitamin C and antioxidants, aids in strengthening hair and preventing dandruff.
- Fenugreek seeds (T. foenum-graecum)*: Recognized for decreasing hair loss and encouraging hair growth.
- Hibiscus (H. rosa-sinensis)*: Employed for conditioning hair and encouraging growth.
- Neem (A. indica)*: Possesses antibacterial and antifungal properties, advantageous for controlling dandruff.

- h. *Essential oils (Lavender, Tea tree, or Rosemary)*: Included for fragrance and improvement of scalp health.

Table 1. Ingredients of herbal shampoo.

Ingredient	Scientific Name	Quantity (per 100 ml)	Function
Aloe vera	<i>A. barbadensis</i> Miller.	9 ml	Moisturizer, anti-inflammatory.
Shikakai	<i>A. concinna</i>	4 g	Natural surfactant, scalp health.
Reetha	<i>Sapindus mukorossi</i>	4 g	Foaming and cleansing agent.
Amla	<i>Phyllanthus emblica</i>	4 g	Strengthening, dandruff prevention.
Fenugreek seed	<i>T. foenum-graecum</i>	2 g	Hair growth reduces hair fall.
Hibiscus	<i>H. rosa-sinensis</i>	4 g	Conditioning, hair growth.
Neem	<i>A. indica</i>	2 g	Antibacterial, antifungal, and dandruff control.
Essential oils	Lavender, tea tree, rosemary	2 ml	Fragrance, scalp health
Citric acid	-	0.4 g	PH adjuster
Preservative (Natural)	Grapefruit seed extract	1 ml	Prolongs shelf life.

Methods

Preparation of Herbal Extracts

1. *Drying and Powdering*: Fresh herbal materials were cleansed, dried in the shade for 5–7 days, and then ground into a fine powder using a grinding machine.
2. *Extraction*: A total of 9 g of each powdered material was subjected to hydro-alcoholic extraction (70% ethanol) via maceration for 24 hours at ambient temperature. The extracts were filtered and concentrated using a rotary evaporator.

Formulation of Herbal Shampoo

- a. *Base Preparation*: Aqueous extracts of reetha and shikakai served as natural surfactants.
- b. *Addition of Herbal Extracts*: The concentrated herbal extracts were slowly incorporated into the base while continuously stirring.
- c. *pH Adjustment*: The pH was modified to a range between 5.5 and 6.5 using citric acid, ensuring it was suitable for the scalp.
- d. *Addition of Preservatives and Essential Oils*: Natural preservatives, such as grapefruit seed extract were included to extend shelf life, together with essential oils for fragrance and health benefits.
- e. *Homogenization*: The final blend was homogenized for 20 minutes to achieve an even consistency.

Evaluation of Herbal Shampoo

Herbal shampoos have developed over centuries, with their beginnings traced back to traditional medicinal systems like Ayurveda, Traditional Chinese Medicine, and Unani. Ancient societies utilized botanical extracts and natural cleansers for cleansing hair and maintaining scalp health. The shift from conventional hair-washing methods to contemporary herbal shampoo products has been shaped by scientific progress, consumer tastes, and sustainability issues:

1. *Physicochemical Properties*: pH, viscosity, foam stability, and surface tension were assessed according to established protocols.
2. *Cleansing and Foaming Ability*: The shampoo was evaluated for its cleaning effectiveness and foam stability using a standardized shake test.
3. *Microbial Analysis*: The formulation was analyzed for microbial contamination through total plate count.
4. *Stability Studies*: The product was kept at varying temperatures (4°C, 25°C, and 40°C) for three months to evaluate its stability and consistency.

CONCLUSIONS

The developed herbal shampoo included plant-derived components that have scientifically verified advantages for hair care. The approach guaranteed a well-balanced formula featuring ideal physicochemical characteristics, cleansing effectiveness, and microbial reliability. The progression of herbal shampoos from conventional recipes to contemporary scientific advancements showcases an increasing need for sustainable and efficient hair care options.

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