



# FORMULATION AND EVALUATION OF POLYHERBAL SHAMPOO

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## ABSTRACT

Polyherbal shampoo is a hair care product crafted from a blend of several herbal extracts and natural ingredients. Unlike conventional shampoos laden with synthetic compounds, polyherbal shampoos harness the power of multiple plant-based components to provide a comprehensive approach to hair health. Each herb contributes unique benefits, such as strengthening, nourishing the scalp, and enhancing shine. The need for polyherbal shampoos arises from a growing inclination towards holistic and natural hair care solutions. These shampoos cater to individuals seeking effective alternatives that prioritize both hair vitality and overall well-being. The varied herbs encompass vitamins, minerals, and antioxidants, fostering hair growth, reducing dandruff, and preventing damage. They offer a harmonious blend of nature's goodness, catering to the rising demand for environmentally-conscious and sustainable options. By embracing the power of plants, polyherbal shampoos embody the fusion of tradition and modernity, meeting the diverse needs of individuals in pursuit of healthier, more vibrant hair. This Polyherbal shampoo contains Shikakai, Ritha, Aloe vera, Neem, Hibiscus Leaf, etc.

**INDEX TERMS** - Polyherbal, Hair, Shikakai, Aloe-vera, Neem, Hibiscus Leaf.

## I. INTRODUCTION

Hair is one of the vital parts of the body considered to be a protective appendage on the body. Shampoos likely rank as the most commonly utilized cosmetic items to cleanse both hair and scalp in our everyday routines.<sup>[1]</sup> Essentially, a shampoo can be described as a detergent solution with added ingredients to provide various advantages like improving hair conditioning, lubrication, and even potential medical benefits. In today's times, there is a wide array of shampoos available, including synthetic, herbal, medicated, and non-medicated options. However, the preference for herbal shampoos is increasing among consumers due to their perception that these products, originating from natural sources, are secure and devoid of adverse effects.<sup>[2]</sup> Herbal formulations are seen as substitutes for synthetic shampoos; yet creating cosmetics solely from entirely natural ingredients presents a challenging endeavor.<sup>[3]</sup> There are large numbers of medicinal plants which are reported to have beneficial effects on hair and are commonly used in formulation of shampoo.<sup>[4]</sup> The herbal shampoo although better in performance and safer than the synthetic ones will be popular with consumers.

## II. MATERIAL AND METHOD

Table No. 1 Formulation of Herbal Shampoo

Sr. No.	Ingredient Name	Quantity (100 ml)
1	Hibiscus powder	5 gm
2	Neem powder	5 gm
3	Henna powder	5 gm
4	Amla powder	10 gm
5	Shikakai powder	20 gm
6	Ritha powder	20 gm
7	Aloevera Gel	10 ml
8	Banyan Powder	5 ml
9	Tragacanth	1 gm
10	Almond	5 gm
11	Curry Leaves	5 gm

### Importance of Active Ingredients

#### 1. Shikakai

Acacia concinna (Shikakai), a plant utilized in India, has various applications such as the treatment of lengthy hair, dandruff and skin issues. Moreover, Shikakai possesses several medicinal attributes which encompass anti-dandruff, wound-healing, and anti-hair fall properties. Additionally, it exhibits anti-inflammatory and antifungal capabilities as well as antioxidant activity.



Furthermore, it aids in hair growth and maintains scalp cleanliness without disrupting its natural pH balance, consequently fostering accelerated hair development and radiance. It is also effective in strengthening and conditioning hair.<sup>[5]</sup>



**Picture 1: Shikakai**

## 2. Ritha

Reetha is a well-recognized component in numerous Ayurvedic shampoos and cleansing products. The kernels within Reetha seeds are abundant in proteins and display a well-proportioned composition of amino acids, as stated by the World Health Organization.<sup>[5]</sup> Its fruit is rich in vitamin A, D, E, K, saponin, sugars, fatty acids and mucilage. Reetha extract is useful for the promotion of hair growth and reduced dandruff.<sup>[6]</sup> Soapnuts, also known as washing nuts, have been significant in natural hair care for a long time. These nuts contain saponins that contribute to maintaining the health, shine, and luster of hair when applied regularly.<sup>[7]</sup>



**Picture 2: Ritha**

## 3. Aloe-vera

It is used in cosmetics like shampoos, face washes. Aloe Vera is used as a moisturizer for skin.<sup>[8]</sup> The anticipated advantages include hair conditioning, hair surface smoothing, and overall hair health, along with the elimination of dandruff, dirt, grease, and lice. Its purpose involves cleansing the hair, averting scalp debris, and removing residues from hair grooming products. It helps for thickening hair. It also helps to nourish hair.<sup>[9,10]</sup>



**Picture 3: Aloe vera**

## 4. Neem

Neem (*Azadirachta indica*) provides positive effects on cleansing the scalp by efficiently clearing blocked pores and encouraging hair growth. Its rejuvenating qualities are especially advantageous for tackling dandruff problems. Neem possesses preservative and therapeutic attributes, rendering it suitable for addressing diverse hair-related issues. Neem leaves can be employed as a rinse for effectively combatting dandruff. Following Ayurvedic practices, Neem is commonly included in our hair care routines, along with Amla, Lisa, and Acacia. It holds a vital position as an herb for nurturing vibrant curls, promoting hair growth, minimizing hair loss, and augmenting hair volume.<sup>[11]</sup>



Picture 4: Neem Leaf

### 5. Hibiscus Leaf

Chinese hibiscus (*Hibiscus rosa-sinensis*) is a popular remedy for hair growth, promoted by herbal healers. Proponents claim that hibiscus can also help: stop hair loss, make your hair look healthy and lustrous. Proponents claim that hibiscus can also help.



Picture 4: Hibiscus Leaf

### Method of Preparation

All the ingredients were carefully measured in accordance with the formula. A decoction containing Neem and Aloe vera gel was prepared using one portion of water. The mixture was then filtered through muslin cloth, and the resulting filtrate was collected. In a separate portion of water, a decoction of Shikakai and Ritha was created, followed by filtration through muslin cloth to gather the filtrate. Subsequently, the above-mentioned filtrates were combined and thoroughly stirred together. To maintain the desired semi-solid consistency of the herbal shampoo, gaur gum was incorporated as a thickening agent. Then add Glycerin that helps to lock the moisture in hair. Additionally, CAPB (Cocamidopropyl betaine) was introduced for its surfactant and foam-enhancing properties. Finally, preservatives and lemon oil as a fragrance were added to the mixture. Lemon also helps to balance the pH of formulation.<sup>[14]</sup>



Picture 1: Polyherbal Shampoo



### III. EVALUATION OF FORMULATION

To evaluate the quality of commercial and prepared formulations, several quality control tests including visual assessment, physico-chemical controls conditioning performance tests were performed.

**1. Physical appearance/visual inspection:**

The formulation prepared was evaluated for the color, odor and foam producing ability etc.<sup>[15]</sup>

**2. Determination of pH:**

The pH of 10% v/v shampoo solution in distilled water was measured by using pH meter at room temperature.<sup>[16]</sup>

**3. Determination of % of solid contents:**

4 grams of shampoo were placed in a previously clean, dry and weighed evaporating dish. The dish and shampoo was weighed again to confirm the exact weight of the shampoo. The liquid portion of the shampoo was evaporated by placing the evaporating dish on the hot plate. The weight and thus % of the solid contents of shampoo left after complete drying was calculated.<sup>[17]</sup>

**4. Dirt dispersion test:**

Two drops of shampoo were added to 10 mL of distilled water taken in a large test tube. To this solution, one drop of India ink was added and the test tube was stoppered and shaken ten times. The amount of ink in the foam was indicated by the rubric such as None, Light, Moderate or Heavy.<sup>[18]</sup>

**5. Surface tension measurement:**

The surface tension of 10% w/v shampoo in distilled water was measured using stalagmometer at room temperature.<sup>[19]</sup>

**6. Foaming ability and foam stability:**

Foaming ability was determined by using cylinder shake method. Briefly, 50 ml of the 1% commercial or formulated shampoo solution was placed into a 250 mL graduated cylinder; it was covered with one hand and shaken 10 times. The total volume of the foam content after 1 min of shaking was recorded. Foam stability was evaluated by recording the foam volume after 1 min and 4 min of shake test.<sup>[20]</sup>

**7. Wetting time test:**

A canvas paper was cut into 1-inch diameter discs having an average weight of 0.44 g. The smooth surface of disc was placed on the surface of 1% v/v shampoo solution and the stopwatch started. The time required for the disc to begin to sink was noted down as the wetting time.<sup>[21]</sup>

**8. Skin sensitization test**

This test is performed on skin of human volunteers and checks whether it irritation on skin or not.<sup>[14]</sup>

**Table 2: Evaluation of Herbal Shampoo**

Sr. No.	Evaluation Parameters	Observation
1.	Color	Dark brown
2.	Odour	Pleasant
3.	pH (10% solution)	5.5 to 5.9
4.	% Solid contents	3.5%
5.	Surface tension (dynes/cm)	35.77 ± 1.25
6.	Foam volume (mL)	70 ml
7.	Foam type	Small, dence
8.	Wetting time (sec)	177 ± 5
9.	Skin Sensitization Test	No irritation on skin

### IV. RESULT AND CONCLUSION

The current research aims to effectively create an herbal hair shampoo using traditional herbal extracts known for their hair cleansing properties in India. All the components utilized in crafting this herbal Shampoo are deemed safer in comparison to commercially available products. The characterization of the herbal shampoo demonstrated favorable outcomes. Further investigations are needed to enhance the stringent quality assessment of the product, particularly through animal testing, and to evaluate its performance under various conditioning conditions. As seen from the results, it is possible to formulate a natural herbal shampoo by using herbal extracts develop a stable shampoo by excluding all types of synthetic additives, which are normally incorporated in such formulations. Numerous tests were conducted to assess the effectiveness of the prepared shampoo. The outcomes of the evaluation of the newly formulated shampoo indicated similar results in terms of quality control assessment. However, additional scientific confirmation is required to verify its overall quality.



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