



POLYHERBAL SHAMPOO: FORMULATION AND EVALUATION

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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 Shikekai, Ritha, Aloe vera, Neem, and Liquorice etc.

Index Terms - Polyherbal, Hair, Shikekai, Aloe-vera, Neem

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. [1] 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. [2] Herbal formulations are seen as substitutes for synthetic shampoos; yet creating cosmetics solely from entirely natural ingredients presents a challenging endeavor. [3] There are large numbers of medicinal plants which are reported to have beneficial effects on hair and are commonly used in formulation of shampoo. [4] The herbal shampoo although better in performance and safer than the synthetic ones will be popular with consumers.

II. MATERIAL & METHOD

Sr. No.	Ingredient Name	Quantity
1.	Shikekai	15%
2.	Ritha	15%
3.	Aloe- vera	15%
4.	Neem	10%
5.	Glycerin	10%
6.	Liquorice	6%
7.	Guar gum	1.5%
8.	Lemon oil	5%
9.	Cocamido propyl betaine	5%
10.	Propyl paraben	0.5%
11.	Water	q.s to 100ml

Table no. 1 Formulation of Herbal Shampoo

IMPORTANCE OF ACTIVE INGREDIENTS:

1. Shikekai

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 [5]

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.[5] 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 [6] 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. [7]

3. Aloe-vera

It is used in cosmetics like shampoos, face washes. Aloe Vera is used as a moisturizer for skin. [8] 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. [9,10]

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. [11]

5. Liquorice

The inclusion of licorice extracts in hair care formulas offers a fascinating potential for enhancing hair growth. A recent study assessed the safety, stability, and hair growth stimulation effects of an ethanol extract derived from licorice (*Glycyrrhiza glabra*). The hair tonic solutions containing this extract demonstrated hair growth activity comparable to the positive control (minoxidil), along with favorable physical and chemical stability. Moreover, these solutions were deemed safe for topical application. [12] The positive impacts of an herbal supplement from the orient, which includes *G. uralensis* along with *Glycine max* and *Thuja orientalis*, were examined concerning factors such as hair count, hair thickness, scalp moisture and sebum levels, as well as overall scalp health in women. The results revealed a notable advantage in enhancing both hair and scalp conditions.[13]

METHOD OF PREPARATION:

All the ingredients were carefully measured in accordance with the formula. A decoction containing Neem, liquorice powders, 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. [14]



III. EVALUATION OF FORMULATION:

To evaluate the quality of commercial and prepared formulations, several quality control tests including visual assessment, physicochemical 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. [15]

2. Determination of pH:

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

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 [17]

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 [18]

5. Surface tension measurement

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

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 [20]

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 [21]

8. Skin sensitization test

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

Sr.No.	Evaluation Parameters	Observation
1.	Color	Dark brown
2.	Odour	Good
3.	pH (10% solution)	7.0
4.	% Solid contents	3.5%
5.	Surface tension (dynes/cm)	35.77 ± 1.25
6.	Foam volume (mL)	70ml
7.	Foam type	Small, dence
8.	Wetting time (sec)	177 ± 5
9.	Skin Sensitization Test	No irritation on skin

Table 2: Evaluation of Herbal Shampoo

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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