

# Multi-herbal Shampoo Formulated with a Precise Combination of Natural Ingredients

Vaibhav G. Badgujar\*, Sachin R. Gosavi, Darshan S. Bava, Prashant B. Mahale

## Abstract

*The purpose of this study is to develop a unique shampoo. In this study, our research led us to investigate the use of aloe vera, neem, Reetha fruit, rose oil and honey as key ingredients. Our ultimate goal is to create a shampoo that not only uses the power of the right ingredients but also provides great benefits to the hair and scalp. Shampoo, as we all know, is primarily formulated to care for our hair. It plays a crucial role in maintaining a clean and healthy scalp. Shampoo is generally considered a safe and effective product for hair care. The shampoo efficiently cleanses the hair and scalp by eliminating debris, pollutants, and extra oil. So, we decided to create a shampoo that not only cleans the hair, but also strengthens it, darkens it and supports its growth. It also effectively solves hair problems such as dandruff and offers a solution for those looking for healthy hair. The advantage of our herbal shampoo over other shampoos on the market is its ability to improve the appearance and texture of your hair. Regular use of the shampoo promises to give your hair shine, beautiful smoothness and a soft touch. These results are much more realistic than considering the possible effects of regular shampoos. Our shampoo is carefully formulated to not cause adverse hair loss, flaking, itching, irritation, nausea or headaches, unlike many other commercial products. Our research has revealed some positive results in terms of the many benefits of using shampoo. We are happy to continue our investigation based on the information we have gained so far. In doing this, we hope to bring many innovations to the field of natural hair care and offer consumers a safe, effective and reliable shampoo that they can use with confidence in their daily lives.*

**Keywords:** Shampoo nourishes hair, moisturizes follicles, reduces inflammation, herbal preparation, hair care

## INTRODUCTION

Hair plays an important role in enhancing the overall attractiveness of the human body. Most people face hair problems such as hair thinning, premature greying, fridity and hair loss. Shampoo can be defined as a special cosmetic product designed to clean the scalp and hair, is easily packaged and easy to use [1].

The Aloe family includes more than 500 species of succulent flowering plants in the genus Aloe.

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This plant is native to Africa, Madagascar, the Mediterranean, the Arabian Peninsula, South and Central America, the Rio Grande Valley south of Texas, as well as Florida, Southern California and Mexico, the Pacific Rim countries, India, the Caribbean maritime region, and Australia [2, 3]. They flourish in various latitudinal and altitudinal zones and exhibit a wide range of habitats, including forests, wooded-grasslands, woodlands, rocky expanses, mountain tops, cliffs, beaches, waterfalls, and numerous other ecological zones with challenging environmental and soil conditions [4].

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Shampoo is often used cosmetically. They work as a hair care solution for daily cleansing of the scalp and hair. Shampoos are often used as beauty products and contain liquids containing detergents, additives, preservatives and active ingredients. This remedy is usually applied to wet hair, massaged into the strands and rinsed with water. The purpose of using shampoo is to remove dirt and impurities from your hair without stripping it of its natural oils. There are many synthetic shampoos currently on the market, including medicated and non-medicated options. However, herbal shampoos have gained popularity due to their origin, safety, increasing consumer demand and lack of side effects. Synthetic shampoos often contain surfactants (synthetic compounds) that contribute to their cleansing and foaming properties. Unfortunately, long-term use of surfactants can cause side effects such as eye and scalp irritation, hair loss, and dryness. As an alternative to synthetic shampoos, shampoos with natural ingredients can be used. But creating cosmetic products using only natural ingredients can be difficult. There are many medicinal plants used traditionally for hair care around the world, and these plants can be incorporated into shampoos in various forms (e.g. extracts, powders, product raw materials or derivatives). Developing a shampoo based on natural ingredients that is both safer and more effective than synthetic shampoos, while also containing potent disinfectants, cleansing agents, and beneficial components, is a challenging endeavor. That's why we've created a comprehensive guide for crafting hand sanitizers using traditional methods, often incorporating herbal ingredients similar to those used in shampoos [5].

Hair plays an important role in enhancing human beauty. People have been using medicinal plants to cleanse, beautify and care for hair since ancient times. However, over time, synthetic materials have become popular. Nowadays, people are becoming increasingly aware of the damage these synthetic products can cause to their hair, skin and eyes. For this reason, society began to turn to herbal products that are both cheaper and have fewer side effects. Hair wash or shampoo is not only used for cleaning purposes, it also adds shine to the hair, makes it easy to style. There are many types of shampoos like Liquid shampoo, Solid cream shampoo, Jelly shampoo, Powder shampoo, Lotion shampoo and Aerosol foam shampoo. The safety process for herbal shampoos depends on the nature of the ingredients. They can be divided into simple or normal shampoos, antibacterial shampoos, and shampoos containing vitamins, amino acids and protein hydrolysates [6].

## **HAIR STRUCTURE**

Hair, sebaceous glands, sweat glands and nails are important parts of the body. They serve as protective extensions arising from the cutaneous ectoderm, especially the epidermis, during embryonic development. These structures, also known as epidermal derivatives, play an important role in the overall structure and function of the integumentary system [7].

## **HAIR FALL**

Thinning of hair on the scalp is called alopecia and can be permanent or temporary. Hair loss is the most common problem faced by all patients. There are many factors that can cause hair loss, including a poor diet without enough protein, excessive hair dyeing and styling, physical stress, vitamin B deficiency, and too many vitamins. To solve this problem, many supplements are available for cultivation methods such as neem honey [8].






Herbal shampoos are products widely used all over the world and known for their daily instability. Shampoos are formulated with surfactants in solid, powder or liquid form that effectively remove dirt and oil from the scalp and hair when used as directed. Containing natural ingredients and herbs, this shampoo improves hair quality by providing shine, moisture, growth and strength to the roots [9].

The inclusion of natural ingredients in the cosmetics industry has achieved great success in the market. The main reason for this is the interest and awareness in the production of safe and environmentally friendly products [10].

Active ingredients derived from natural sources such as plants, animals and microorganisms have been widely used as important ingredients in cosmetics for centuries. These natural sources often contain compounds such as polyphenols, fatty acids, terpenes and vitamins, which have many beneficial effects and can be included in beauty preparations [11].

Aloe vera plants can reach a height of 100 cm, and most specimens are between 30 and 60 cm in height. Its leaves are thick and grow in the form of rosettes. The gel inside the long, spiny leaves creates a cooling sensation when applied to the skin. Aloe vera leaves contain alkaloids, flavonoids, glycosides, phenols, saponins, tannins, etc. These ingredients help reduce inflammation and reduce pain from burns (Table 1). The leaves of the plant are serrated and long from the base, reaching 30 to 50 cm in length and 10 cm in width at the base. Health benefits of aloe vera include healing wounds, healing burns, preventing skin damage, reducing stomach problems, etc. [12, 13]. Today, aloe vera is widely used as a natural product.

**Table 1.** Description of ingredients of herbal shampoo.

S.N.	Constituents	Biological source	Family	Use	Figure
1	Aloe vera	Dried latex of aloe leaves	Asphodelaceae	Conditioner and moisturizing effect	
2	Neem leaves antimicrobial agent	Dried leaves of <i>Azadirachta indica</i>	Miliaceae	Prevent the dryness of hairs and flaking of hairs, antimicrobial agent	
3	Reetha fruit	Dried fruits of <i>Sapindus mukorossi</i> .	Sapindaceae	Detergent, foaming property and antidandruff	
4	Rose oil	The petals of Rosa species especially <i>R. damascena</i> and <i>R. centifolia</i>	Rosaceae	Used to resist hair loss	
5	Honey	Flower nectar collected by bees	Apidae	Naturally smooths the hair shaft and restores shine	

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## MATERIAL AND METHODS

Formulated a multi-herbal shampoo featuring a blend of beneficial ingredients including Aloe vera, Neem, Reetha fruit, Rose oil, and Honey. Each ingredient was thoughtfully selected for its individual properties and their synergistic benefits for hair care. Aloe vera is known for its relieving and hydrating properties, whereas Neem makes a difference to cleanse and feed the scalp. Reetha natural product, on the other hand, contributes to characteristic hair conditioning, and Rose oil includes a charming scent to the cleanser. To enhance the overall effectiveness, the moisturizing properties of honey are incorporated into the formulation.

### Ideal Properties of Herbal Shampoo

1. The product should effectively cleanse to remove dust, dirt, excess sebum, oil residues, and loose debris from the hair.
2. It should be rinsed with warm water.
3. Hair should be moist, soft, shiny, manageable, and fly-aways should be kept to a minimum.
4. It should not cause side effects or irritation to the skin or eyes.
5. It should not make the hands hard or cracked.
6. The product must produce enough foam to meet the user's request [14].

### Evaluation of Herbal Shampoo

To evaluate the prepared formulation, quality control test including visual assessment and physicochemical controls such as pH, density, viscosity, surface tension, foam volume, foam stability and wetting time was performed using standard protocol.

1. Physical/Test Approval of the Product: The preparation process was evaluated for clarity, color, odor and ability to form foam and flow well.
2. pH Determination: Prepare shampoo at a concentration of 10% v/v in distilled water and use a pH meter to measure the pH value of the solution.
3. Determination of content: Pour into a clean and dry evaporation plate and add 4 gm of shampoo to the plate. The disk containing the shampoo is then placed on a hot plate until half of the liquid has evaporated. Calculate the weight of the product in the shampoo after it dries.
4. Wetting time: Wetting time is determined by taking into account the time required to complete the canvas. Cut 0.42 gm canvas paper into 1 in diameter discs. Place the canvas paper on the surface of the shampoo (1% v/v) and use a stopwatch to measure the time it takes for the paper to sink.
5. Cleansing Effectiveness: The cleansing power of the herbal shampoo was evaluated using unwashed hair for 7 days. This shampoo is used to wash the hair of people who have used the oil 4–5 h before washing. The performance of the shampoo is measured by its ability to remove oil from the scalp.
6. Bubble capacity and foam stability: The capacity of the shampoo is determined by the way the method of agitation during testing. Pour 50 ml of 1% herbal shampoo into a 250 ml graduated cylinder, then cover the cylinder with your hand and shake for 10 min. After shaking for 1 min, fill in all the foam. The foam filling is also turned off for 10 min at 1 min intervals. Bubble volume remains constant throughout the period.
7. Safety Assessment: Examine the stability of the process over a period of 4 weeks, maintaining a temperature of 25–30°C.
8. Skin sensitivity test: Apply the herbal shampoo to the skin for 5 min, rinse and check for signs of irritation or irritation.
9. Performance evaluation: The conditioning tool covers all hair benefits such as hair quality, improved shine, softness and silkiness.
10. Determination of viscosity: Measure the viscosity of the shampoo using an Ostwald viscometer. The viscosity of the shampoo is determined by observing the flow of the shampoo from the gauge to the base, accounting for the density of the shampoo, water, and time.

11. Quick calculation: To determine the density, first fill in the empty weight of the pycnometer. Then fill the pycnometer with shampoo up to its neck and measure. Then the pycnometer is filled with water and weighed again.
12. Microbiological analysis: For sterile analysis, pour 1 ml of shampoo into a sterile bowl and let it sit. The plates were then incubated at 37°C for 24 h and analyzed for microbial growth.

### Formulation of Herbal Shampoo

#### Procedure

- First, weigh 45 gm of aloe vera gel and place it in a sterile and spacious container.
- Then add 5 gm of Reetha powder and 5 gm of honey and make sure they are all mixed.
- Also prepare the Shampoo Base Concentrate in a sterilized container as directed.
- Then add 15 gm of neem extract and a few drops of rose oil for a pleasant scent. Also measure and pour 200 ml of filtered water into the mixture and stir until the water and concentrate are thoroughly mixed.
- Finally, add the paste made from herbal powder into the shampoo and mix thoroughly.

### CONCLUSION

The goal of this research is to develop a shampoo that would strengthen and slow down hair thinning. We employ botanicals, particularly Aloe vera, Neem, Reetha fruit, Rose oil, Honey which have historically been used for conditioning and hair development, to make our shampoo. The primary objective of this study is to develop a long-lasting and potent shampoo devoid of the artificial components frequently included in such goods. Making the shampoo more effective and completely determining the phytochemical composition of the plant will be helpful in future studies. Furthermore, more study on this threatened species will support sustainable usage and conservation efforts. To maximize the design's potential and guarantee the product's efficacy and safety, emotional and safety testing are recommended.

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