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## Research Article

# Formulation And Evaluation Of Herbal Shampoo With Goat Milk

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## ABSTRACT

Herbal Shampoo is a natural hair care product that is used to strengthen and darken hair while also removing oil, grime, and dandruff. People are interested in hair care products these days, like shampoos and conditioners. Thus, the creation and assessment of an herbal shampoo utilizing goat milk is a novel and advantageous idea in the field of hair care. Goats supply a large amount of milk and milk products, which is important for the rural economy and people's health. More calcium, magnesium, and phosphorus are found in goat milk than in cow or human milk. Goat milk shampoo is a popular cosmetic product that is used to treat hair and scalp. It is said to have purifying properties and also contributes to the preservation of the health and beauty of hair by adding shine and enhancing manageability. The physicochemical features of this shampoo were ascertained using a battery of experiments, including those involving its physical appearance, pH, washability, solubility, stability study, skin irritation test, foam stability test, filth dispersion, and viscosity, among others.

## INTRODUCTION

The way one feels about their look is greatly influenced by their hair, so losing hair can be detrimental to one's confidence and sense of self. Consequently, new developments in hair science

and hair care technologies have been documented in publications asserting creative approaches and tactics for hair care and cosmetics.<sup>1</sup> The major method of treating hair and scalp was with herbal shampoo made from goat milk, which is not only

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regarded as a cosmetic product with purifying properties but also as a means of preserving the health and beauty of hair by adding gloss and enhancing manageability. Goats supply a large amount of milk and milk products, which is important for the rural economy and people's health.<sup>2</sup> More calcium, magnesium, and phosphorus are found in goat milk than in cow or human milk. Medium Chain Triglycerides (MCT) levels are greater in goat milk, which are identified as a special type of fat with special health advantages.<sup>3</sup> Humans need goat milk as a vital nutrient, particularly those who struggle with lactose intolerance or are sensitive to the milk of other animals. Vital components included in Goat milk like fat, protein, lactose, vitamins, enzymes, and mineral salts. Goat milk has more of the majority of its constituents than the milk from other milk-producing animals.<sup>4</sup> Goat milk, for example, has 13% more calcium, 47% more vitamin A, and 25% more vitamin B6 than cow's milk. Therefore, new challenges for cosmetic technology are focused on the development of natural components as well as innovative methodologies for shampoo formulation in order to suit the needs of a multitasking formulation, following also the recent marketing-trend targeted to the "natural world".<sup>5</sup> Numerous skin and hair disorders arise in the context of shifting eating habits, stress levels, and environment dependence.<sup>6</sup> The primary goal of this study was to replace dangerous synthetic ingredients with safe natural ones in a shampoo formulation. Synthetic products are less effective, have more adverse effects, and increase the risk of symptom recurrence. Given that the scalp is among the body's most absorbent tissues, products given to it immediately reach the bloodstream without passing through any sort of filter. Therefore, it is crucial to comprehend the impact of each chemical

utilized in the composition of shampoo.<sup>7</sup> To make and assess an herbal shampoo with goat milk, focusing on product quality, safety, and efficacy through physiochemical function analysis. Additionally, it gives the hair shine, smoothness, and tenderness. Herbal shampoos are cosmetic preparations that assist cleanse the hair and scalp similarly to ordinary shampoo by utilizing traditional Ayurvedic expertise. Their primary applications are the elimination of oils, dandruff, filth, and environmental pollutants.<sup>2</sup> Herbs nowadays assist individuals in maintaining their health through the use of natural resources. This is a result of individuals discovering the health benefits of herbs in the everyday cosmetics they used. The awareness and necessity of using herbs in cosmetics is growing since it's thought that these formulations are secure, unadulterated, efficient, and reasonably priced. It has been demonstrated that products containing herbs improve customers' health. The objective of the current study is to formulate and evaluate an herbal shampoo that uses a variety of herbs and does not contain any of the conventionally added synthetic components. This shampoo strengthens, darkens, and removes sebum, filth, and dandruff while encouraging hair growth. Additionally, it serves as a conditioning agent.<sup>8</sup>

## **MATERIALS AND METHODS**

The current study examines the creation and assessment of a herbal shampoo that uses natural ingredients such as goat milk, tulsi, amla, methi, ritha, rose oil, and lemon to remove filth and dandruff and preserve the health and beauty of hair. The Dhule district's rural areas provided the goat milk that was collected. We bought additional components in the form of dried powder from the nearby market. The following lists the specific natural ingredients that were utilized to make the herbal face pack.



## Ingredients of Formulation

### Goat Milk:



**Fig.1 Goat Milk**

The most popular type of cosmetic hair care is shampooing. Contemporary consumers demand a shampoo to do more than just the basic purpose of cleaning. Modern shampoo formulas are adjusted to account for variances in hair type, hair care routine, and particular issues pertaining to the scalp's surface state. Goat milk has the potential to improve hair care while preventing hair damage.<sup>9</sup>

### Tulsi:



**Fig 2. Tulsi Powder**

Tulsi, often known as holy basil or *Ocimum tenuiflorum*, is a fragrant perennial plant in the Lamiaceae family. Antioxidants and vitamin K are abundant in it. Tulsi is a useful remedy for hair loss. It is included as an essential part of herbal hair loss treatment. The plant which reduces hair loss and guards against bacterial and fungal infections by fortifying the hair roots.<sup>10</sup>

### Amla:



**Fig. 3 Amla Powder**

Encourages the growth of hair to make Amla oil, dried Amla fruits are cooked in coconut oil and then pulverized. This conditioner works wonders in halting hair graying and baldness. Combine  $\frac{1}{2}$  cup Amla juice,  $\frac{1}{2}$  cup lime juice, and a small amount of water for greasy hair. Use this to create a hair shampoo that reduces oil.<sup>11</sup>

### Methi:



**Fig. 4 Methi Powder**

A well-kept secret is that methi, also known as fenugreek, is a natural remedy for hair growth. Methi, also known as fenugreek, removes dandruff, encourages hair growth, and calms dry, irritated scalp. Methi contains iron, potassium, protein, vitamin C, and lecithin, all of which support healthy hair follicles, enhance hair growth, and give hair a glossy sheen. Fenugreek seeds are present in the Conscious Health Hair Mask. For hair, skin, or cookery, it is best to get extra virgin

coconut oil that is cold-pressed, organic, and organic.<sup>12</sup>

#### **Ritha:**



**Fig. 5 Ritha Powder**

Ritha is widely utilized in natural hair care products because it adds luster, shine, and health to hair. It can be applied every day to feed the scalp of the hair and encourage the growth of new hair. Because of its insecticidal qualities, ritha powder can be combined with warm water to make a paste that can be massaged into the scalp to help control dandruff and get rid of lice. You can apply the powdered forms of Amla and Ritha to your hair to help prevent graying and encourage healthier hair development.<sup>13</sup>

#### **Rose oil:**



**Fig. 6 Rose Oil**

Rose oil helps moisturize and restore dry, damaged hair and is a highly hydrating oil. It lessens frizz,

enhances texture, and replenishes moisture in hair. Rose oil's fatty acids and antioxidants support shine and fortify hair. In addition to its antibacterial and anti-inflammatory qualities, rose oil can be used to treat dermatitis and dandruff on the scalp. Using rose oil as a scalp treatment might enhance blood flow and possibly encourage the growth of new hair.

#### **Lemon:**



**Fig. 7 Lemon**

Short-term efficacy of lemon juice in suppressing the fungus was observed, while long-term outcomes were found to be inconsistent. uses a polyherbal remedy that includes lemon extract and citrus to cure dandruff. Numerous phytochemicals, such as concentrated tannins, terpenoids, flavonoids, hydroxybenzoic and hydroxycinnamic acids, and low molecular weight phenols like acetophenones are produced and accumulated in the cells of citrus fruits. Vitamin C, which is abundant in citrus fruits, helps keep the pH of the scalp balanced and guards against dandruff and itching. Additionally, it adds shine and thickness to hair while reducing dullness.<sup>14</sup>



**INGREDIENT:****Table 1: - composition of formulated herbal shampoo**

Sr. no	Material required	Quantity	Use
1	Goat Milk	10 ml	Conditioning agent
2	Ritha Powder	15gm	Foaming agent
3	Tulsi Powder	10gm	Anti-dandruff agent
4	Methi Powder	10gm	Restore shine and smoothness
5	Amla Powder	10gm	Anti-dandruff agent
6	Lemon	2-3ml	Antimicrobial
7	Rose oil	5 ml	Fragrance
8	Sodium Lauryl Sulphate	10 mg	Foaming agent/Surfactant
9	Methyl Paraben	10 mg	Preservative
10	Distilled Water	150 ml	-

**FORMULATION OF HERBAL SHAMPOO**

The powders were combined in various ratios to create a shampoo, the recipe for which is displayed in Table No. 1. Next, combine all of the powders in a beaker, add 150 ml of distilled water, and stir to incorporate the entire 150 ml volume, resulting in 100 ml of formulation. Because boiling (or water bath) operations are included in the entire process, we add 150 ml to the 100 ml of total formulation that results. This serves as a reminder that the vaporization process is what gives the volume of 150 ml. to obtain the formulation's 100 ml results. Methyl paraben, a preservative, and sodium lauryl sulphate, a surfactant, are added once the boiling process has begun. 10 ml of goat milk are added to the solution sample after ten minutes. It takes 20 minutes to heat this solution. 20 minutes later. Once the solution has cooled, the filter paper can be used to filter them. A beaker is filled with filtered solution, rose oil is added, and a 100 ml formulation is created (Fig. 8).

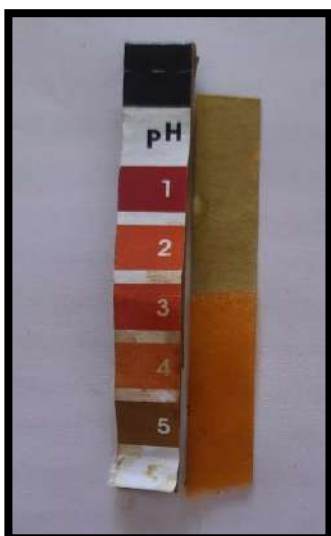
**EVALUATION OF SHAMPOO****1. Physical appearance:****Table 2: - Physical Appearance**

<b>Clarity</b>	Cloudy
<b>Odor</b>	Pleasant
<b>Color</b>	Dark brown
<b>Texture</b>	Smooth

**2. Determining of pH: -**

pH paper is used to calculate pH. The pH range will be 4 after the pH of 100% of the shampoo was tested and the pH paper was dipped into the shampoo to obtain the result. Using pH paper at room temperature, the prepared sample's pH was measured.15





**Fig. 9** pH of shampoo is 4.

### 3. Washability:

To see how easily and thoroughly the formulations could be cleaned with water, the formulation was applied to the skin and then removed.



**Fig. 10** Washability: Easily Washable

### 4. Solubility:

100 ml of water is mixed with 2 ml of the shampoo. To improve solubility, the resulting solution was heated after being shook. The solution was heated for ten minutes, cooled, and the amount of residual was then measured.<sup>16</sup>

### 5. Stability Study:

The formulations' acceptance and stability of their organoleptic qualities over the course of storage demonstrated their chemical and physical stability.

### 6. Skin Irritation Test:

For fifteen minutes, lightly shampoo the upper portion of your skin. Within minutes, you should experience a reaction, such as burning, reddening,

or other irritation, if you are sensitive to any of the chemicals. It's probably safe to utilize the formulation if you don't experience any side effects.



**Fig. 11** Skin Irritation Test: No harmful effect on skin

### 7. Foam Stability Test:

The cylinder shake method was utilized to ascertain the stability of the foam. A 100 ml graduated cylinder was filled with around 50 ml of the manufactured shampoo solution (1%) and shaken vigorously for 10 minutes. After 20 minutes, the foam volume from the shake test was recorded to determine the foam stability.<sup>16</sup>



**Fig. 12** Foam stability test: Good Stability

### 8. Dirt Dispersion:

In a test tube holding ten milliliters of distilled water, two drops of the shampoo formulation were introduced. Ten milliliters of distilled water were placed in a test tube, and two drops of methyl blue

were added. A test tube was filled with two drops of Methylene blue, and it was shaken for ten minutes. Light was the estimated amount of foam.<sup>17</sup>



Fig. 13 Dirt Dispersion: Light.

## 9. Viscosity:

The Ostwald viscometer is used to measure viscosity. Test solution is poured into the Ostwald viscometer up to point A. Specifies the duration of the test solution flow from point A to point B.

This viscosity is calculated by the formula –

$$n_2 = \frac{p_2 t_2}{p_1 t_1} \times n_1$$

Therefore, viscosity of given shampoo 31.58 paise at room temp. Determined by Ostwald viscometer.



Fig. 14 Ostwald Viscometer

Table 3: - Physicochemical Evaluation of Formulated Shampoo

pH	4
Washability	Easily washable
Solubility	Soluble in water
Dirt dispersion	Light
Foaming capacity	Good foaming capacity
viscosity	31.58
Texture	Smooth
Colour	Dark brown

## CONCLUSION:

Our shampoo's evaluation study demonstrated its superior foaming ability, rapid wetting time, and good cleaning action. In addition to being considerably less likely to cause protein loss when combing, the specially designed shampoo was also safer than the clinical conditioning chemicals. The creation of a stable and functionally effective shampoo was the primary goal of this study. The

goal of the current study was to create an herbal shampoo that is safer than chemical conditioning agents while yet giving hair a smooth and straight appearance. The aqueous extract of medicinal plants, which are historically used to cleanse and smooth hair, was used to produce herbal shampoo. The current study uses goat milk, tulsi, amla, ritha, methi, lemon, and rose oil, among other ingredients, to deliver the beneficial conditioning



effects. This study's main objective was to develop a shampoo that is as effective as today's synthetic version, but produced completely of herbs. Plant powders, frequently used in traditional Asian medicine and highly regarded for their hair cleaning properties, are what we use to make our herbal shampoo. All of the ingredients in shampoo are much less likely to cause hair or protein loss when combed than synthetic conditioning agents like silicones and polyquaterniums. Several tests were carried out to evaluate and compare the physicochemical properties of herbal shampoo.

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