

# A REVIEW ON FORMULATION AND DEVELOPMENT OF NATURAL HAIR CARE PRODUCTS

Jeevan prajapati\*, Nikhil prajapati\*, Adarsh prajapati\*, Abhay yadav\*, Shilpa gupta

## ABSTRACT:-

This review article emphasizes that currently people prefer natural food, herbal hair cosmetics, herbal drug formulation for a healthy life. This involves herbal hair care. Cosmetics which includes herbal hair oil, a herbal hair shampoo, herbal hair conditioner, herbal hair dye. The different types of herbal hair oil available in market are amla hair oil, coconut hair oil, bhringraj hair oil etc. In this review the composition of herbal hair oil involves aloe vera pulp, tulsi, hibiscus, shikakai, coconut oil, almond oil. This review article also involves important information about the herbal hair shampoo which involves the properties, types, function and advantages of herbal shampoo also this review emphasizes the importance of herbal hair conditioner, herbal hair dye. Herbal hair conditioners have gained significant attention due to their natural ingredients, minimal side effects, and sustainable benefits for hair care. This review explores the formulation and evaluation of herbal hair conditioners, emphasizing the use of plant-based ingredients, their conditioning properties, and scientific assessments. The paper discusses various herbal extracts, their role in hair conditioning, and the methodologies used to evaluate product efficacy.

**Keywords:** Hair care, Hair growth, Herbal, Cosmetics, Natural hair wash, Herbal hair cleanser.

## INTRODUCTION:-

Herbal hair cosmetics are one of the maximum effective and powerful areas of decorative generation. It is used for beautifying and simple improving the mortal personality. Natural products are characterised with the resource of better tolerability in contrast with distinctive artificial products. Herbs and essential oils used in cosmetics shouldn't be utilized with the intention of having any therapeutic effects or penetrating the skin's outer layers. Natural ingredients, botanical compounds, and "free-from" claims (such as "free from" salts, sulfates, silicones, parabens, and other potentially dangerous substances) are the primary attributes that consumers in the hair care sector seek out. Any portion of the plant, including the bark, rhizomes, fruits, flowers, seeds, roots, and flowering tops, is referred to as a herb. Hair oil are hair care components implemented to the hair for the treatment of hair disorder which include baldness, greying of hair, hair fall, dry hair and also allows in providing nourishment to hair.

In recent years, herbal hair conditioners have gained prominence as natural and sustainable alternatives to conventional hair care products. Unlike synthetic conditioners that may contain harmful chemicals such as sulfates, parabens, and silicones, herbal hair conditioners use plant-derived ingredients that nourish, strengthen, and protect hair while minimizing the risk of irritation and allergic reactions. The global shift toward herbal cosmetics is driven by consumer awareness of the benefits of natural ingredients. Herbal hair conditioners, enriched with botanical extracts, essential oils, and bioactive compounds, provide deep conditioning, repair damaged hair, and maintain scalp health. They are formulated to restore moisture, reduce frizz, enhance shine, and improve hair manageability without the adverse effects of synthetic formulations.

## HAIR:-

Hair is one of the traits functions of mammals and has various characteristic such as safety in opposition to external elements i.e. warm temperature, cold, and many others. Hair is one in all the essential components of frame considered to be shielding appendages at the frame and accessory form of the integument along side sebaceous gland and sweat gland. The fundamental part of hair is bulb, root and shaft. Hair fall, dandruff, lice, cut up give up, grey hair are a number of the extensively identified problems related to hair. A chunk of hair appears simple but it's miles one of the maximum complex structures in frame.

A herbal shampoo that promotes hair growth, enhances strength, smoothens, adds shine, and restores natural hair color without causing any damage. For this purpose, ingredients such as amla, Reetha, Shikakai, Hibiscus, and Neem Leaves were selected for the formulation of the herbal shampoo. These ingredients were chosen based on traditional knowledge. The herbal shampoo is designed to cleanse the hair while also conditioning, smoothing, and maintaining scalp and hair health, effectively preventing dandruff. Additionally, it is expected to possess antibacterial and antimicrobial properties. These antimicrobial agents play a significant role in combating Infectious diseases. Based on the findings, we Observed several beneficial properties of the herbal shampoo, and further efforts will focus on optimizing its use as a cosmetic product for human application.

## ANATOMY OF HAIR:-

Hair a personality's have round over two million hair follicles which have each positive in addition to terrible Impact on pores and skin fitness. It is one many of the very vital components of our body this is derived from The germ layer of the skin, it's paintings as a defensive appendage for the body and is ponder as an accessory Shape of the frame having cowl like structure beside sebaceous gland and sweat gland. In embryonic degree Development they may be originated from the stratum accordingly they're additionally referred to as cuticular Derivatives. Follicle and hair shaft rectangular measure the two primary components of a hair. The organic hobby of follicle is hair growth, pigmentation. Hair shaft is basically constituted of supermolecule and is taken into Account to be useless. For healthy and clever trying attainable hair, to require care of each follicle and hair shaft is essential . In several seasons hair behaves otherwise eg, in summer season warmness eliminates wet From the hair developing it dry and brittle. Understanding the structure of hair is crucial in formulating effective herbal hair conditioners. Hair is a complex, keratinized structure that grows from follicles embedded in the scalp. It undergoes a continuous growth cycle and plays protective, sensory, and aesthetic roles. The anatomy of hair can be divided into two major parts:

1. **Hair Shaft** – The visible part of the hair that extends above the scalp.
2. **Hair Follicle** – The root portion located beneath the scalp, responsible for hair growth.

Research Through Innovation

## MATERIAL AND METHOD

BIOLOGICAL SOURCE	CONSTITUENTS	FAMILY	USE
Hibiscus leaves	Dried leaves of Hibiscus rosea	Malvaceae	Prevent hair loss and growth promoter.
Neem leaves	Dried leaves of Azadirachta indica	Meliaceae	Prevent the dryness of hairs and flaking of hairs, antimicrobial agent.
Amla fruit	Dried ripe fruits of Emblica officinalis.	Euphorbiaceae	Darkening of hair and hair growth promoter.
Aloevera	Dried latex of aloe leaves.	Asphodelaceae	Conditioner and moisturizing effect.
Shikakai fruit	Dried pods of Acacia concinna.	Fabaceae	Foam base and antidandruff.
Reetha fruit	Dried fruits of Sprindus mukorossi.	Sapindaceae	Detergent, foaming property and antidandruff.
Peppermint powder	Dried leaves of Mentha piperita.	Lamiaceae	Antimicrobial activity, prevent hair loss, cooling effect.
Xanthum gum	Xanthomonas campestris	hydrocolloid	Gelling agent.
Distilled water	-	-	Vehicle

### 1. HIBISCUS LEAVES

**Family:** Malvaceae

**Biological source:** Dried leaves of Hibiscus rosea

**Uses:**

- Hibiscus is also known as china rose. This flower generally used in the formulation of shampoo because it stimulates hair growth. It contains amino acid which produce special kind of structural proteins called “Keratin”, which work as building blocks for hair.
- It also provides some useful nutrients like Vitamin C, flavonoid, amino acid, mucilage fiber, antioxidant etc....., all this promote hair growth and reduce hair loss.
- It contains antioxidant which help to stop the oxidation process to protect hair from different harmful environments factor. It has flavonoids which accelerate the growth of hair, vitamin helps build collagen which is most important for hair growth, whereas amino acid boost hair health by preventing breakage and encouraging growth and fibers help to reduce hair loss, reduce the chances of dandruff and even helps regulate sebum production which causes oily hair. Hibiscus has all this property that’s why it is the most important ingredient used in herbal shampoo.



*Fig: HIBISCUS LEAVES*

## 2. NEEM LEAVES

**Family:** Meliaceae

**Biological source:** The biological source of Neem is the *Azadirachta indica* tree, which is native to the Indian subcontinent and parts of Southeast Asia.

### USES:

- Neem is a common ingredient in herbal shampoo. Because it promotes the hair growth. Neem leaves contain quercetin and  $\beta$ -sitosterol, which contain anti-bacterial and anti-microbial properties which provide protection from fungus that causes dandruff. It also promotes hair growth and cleanses and strengthens hair follicles, which can lead to healthier hair.
- It also contains Flavonoids, tannin, phenols, saponin, azadirachtin and gallic acid and also contains vitamin E. All these chemical constituents are found in neem that promotes hair loss and also reduce the dandruff in the scalp. It also provides hair strength and prevents hair damage.



*Fig: NEEM LEAVES*

## 3. AMLA FRUIT

**FAMILY:** Euphorbiaceae

**Biological source:** This consists of dried, as well as fresh fruits of the plant. *Emblica officinalis* Gaertn (Phyllanthusemblica Linn.)

### Uses:

- AMLA plays an important role in the formulation of herbal shampoo. It is used in lots of shampoo and conditioner owing to its rich content of antioxidants and iron. It also contains vitamin C which helps to reduce hair fall.
- It contains ascorbic acid, tannin, flavonoids, alkaloid and fatty acid .... etc. All these chemical constituents are mainly responsible for hair protection and make them smooth and shiny and increase hair growth.



*Fig: AMLA FRUIT*

#### 4. ALOEVERA

**FAMILY:** Asphodelaceae

**BIOLOGICAL SOURCE:** Dried latex of Aloe Vera leaves.

**USES:**

- Aloe Vera is an important ingredient that is used in the formulation of herbal shampoo. It is generally responsible for its soothing and moisturizing effect. It is also used to prevent hair damage and hair loss and also provides hair growth due to which hair becomes long and silky and dandruff-free scalp.
- People can use Aloe Vera gel in day-to-day life because it's showing no side effect.. so people can be easily applied in the hair. It is also controlling the fizziness of our hair and also repairs our hair, reducing split ends. It also controls hair damage and is free from bacterial and microbial effects.



*Fig: ALOEVERA*

#### 5. SHIKAKAI FRUITS

**FAMILY:** Fabaceae

**BIOLOGICAL SOURCE:** Dried pods of Acacia concinna.

**USES:**

- Shikakai is the most important ingredient that is used in herbal shampoos and the formulation of herbal shampoo because it is responsible for foam base and anti-dandruff properties in the herbal shampoo. It is also used to remove dirt from the scalp and also provides protection from environmental factors.

- It is responsible for hair growth, and it should be also providing nourishment to the hair because of them the growth of hair will be increases. It should also prevent the hair damage and hair losses. Shikakai can make hair softer, shinier, and thicker.



*Fig:SHIKAKAI FRUITS*

## PHYSICAL AND CHEMICAL EVALUATION

### A. *pH Determination*

- Purpose: To ensure the conditioner is compatible with the scalp and hair.
- Method:  
Take 1% w/v of the conditioner and dissolve it in distilled water.  
Measure the pH using a digital pH meter.
- Ideal Range: 4.5 – 5.5 (close to the natural pH of the scalp).

### B. *Viscosity Measurement*

- Purpose: To check the consistency and ease of application.
- Method:  
Use a Brookfield Viscometer at room temperature.  
Test the viscosity at different shear rates.
- Ideal Range: 5,000 – 20,000 cps (for smooth application).

### C. *Spreadability Test*

- Purpose: To determine how easily the conditioner spreads on hair.
- Method:  
Place a small amount of conditioner between two glass slides.  
Apply weight and measure the spread diameter.
- Ideal Result: Should spread evenly without clumps.

### ➤ **Performance Evaluation**

#### a. Moisturizing Effect (Water Retention Test)

- Purpose: To check how well the conditioner retains moisture.
- Method:  
Apply the conditioner to hair tresses.  
Measure the moisture content before and after conditioning using a moisture analyzer.
- Ideal Result: Increase in moisture retention, indicating effective hydration.

#### b. Detangling Efficiency

- Purpose: To measure the ease of combing after conditioning.

- Method:

Take untreated hair strands and apply the conditioner.

Use a tensiometer to measure the force needed to comb the hair.

- Ideal Result: Reduction in combing force, indicating improved detangling.

#### c. Hair Smoothness and Shine Test

- Purpose: To assess how well the conditioner improves hair texture.

- Method:

Apply the conditioner on human or synthetic hair tresses.

Use sensory analysis (volunteers) or an instrumental gloss meter to measure shine. Ideal Result: Hair

should feel soft, smooth, and shinier than untreated hair.

### ➤ Microbiological Evaluation

#### a. Microbial Contamination Test

- Purpose: To check for bacterial or fungal growth in the conditioner.

- Method:

Perform Total Plate Count (TPC) by inoculating the conditioner sample on nutrient agar.

Check for bacterial and fungal growth after incubation at 37°C for 24-48 hours.

- Ideal Result: Should be free from microbial contamination.

#### ➤ Stability Studies

#### a. Accelerated Stability Test

- Purpose: To assess how well the conditioner holds up under different storage conditions.

- Method:

Store the conditioner at different temperatures (4°C, 25°C, 40°C) for 3 months.

Observe for phase separation, color change, or texture alteration.

- Ideal Result: No significant changes in appearance, texture, or fragrance.

## CONCLUSION :

The formulated herbal hair conditioner is an effective and natural alternative to commercial conditioners, offering deep nourishment, hydration, and hair protection. Using carefully selected herbal ingredients such as Aloe Vera, Hibiscus, Fenugreek, Rose Water, Coconut Oil, Water, and Glycerin, this conditioner enhances hair health without the harmful effects of synthetic chemicals.

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