

A Review on Formulation and Evaluation of Herbal Shampoo

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Abstract: *Because of their mildness, environmental friendliness, and medicinal qualities, herbal shampoos have drawn a lot of interest as natural substitutes for synthetic hair care products. This review examines the composition, main components, and advantages of herbal shampoos, emphasizing their ability to support healthy scalp and hair. Natural surfactants, herbal extracts, essential oils, and plant-based conditioning ingredients are commonly used in the formulation of herbal shampoos. Bioactive substances including alkaloids, flavonoids, saponins, and polyphenols found in common plants like aloe vera, bhringraj, neem, hibiscus, and fenugreek help nourish hair, lessen dandruff, and stop hair loss. Furthermore, stability and scalp compatibility are guaranteed by natural thickening and pH-adjusting ingredients. Herbal shampoos are safer for sensitive scalps and long-term usage than synthetic ones because they don't include dangerous ingredients like silicones, parabens, or sulfates.*

Keywords: Herbal Shampoo, Viscosity, Cosmetic, Foam, Amla, Scalp

I. INTRODUCTION

People have been taking care of their health, skin, and hair with natural compounds derived from plants and herbs since ancient times. Numerous beneficial materials found in nature aid in healing, protecting, and enhancing beauty. Many people believe that a person's entire health is reflected in their hair. The most popular method of keeping hair clean is to wash it with shampoo.

Shampoo's primary function is to rid the scalp and hair of oil (sebum), debris, and dead skin. Different shampoos are designed to address various hair conditions, such as dandruff, oily hair, or issues with hair loss. Typically, shampoos are available in liquid, cream, or gel form.

The components utilized, such as natural oils, fatty alcohols, gums, or other thickening agents, determine how thick they are. Herbal cleaners like Shikakai and Reetha, which naturally clean hair without harming it, are traditionally used by Indian women. Because herbal shampoos are safer, gentler, and derived from natural sources, people now prefer them to synthetic (chemical) shampoos.

Definition:

Herbal hair shampoo

Herbal hair shampoo is a hair-cleansing product composed of natural plant-based components like essential oils, extracts, and herbs. Without the use of harsh synthetic chemicals, it is intended to clean the scalp and hair while offering extra advantages including conditioning, nourishment, and defense against issues like dryness, dandruff, and hair loss.





Fig. 1 Herbal Hair Shampoo

Ideal Properties of A Shampoo:

1. It shouldn't irritate or harm skin or hair.
2. Even in modest doses, it ought to be effective.
3. It should effectively clean the scalp and hair by eliminating dead skin cells, oil, debris, and remaining hair products.
4. It should make combing wet hair simple.
5. It need to be non-toxic and safe for the scalp and hair.
6. It should be simple to remove and leave the hair manageable, lustrous, and silky.
7. It should smell good and mask the unpleasant smell of wet hair.

Advantages of Herbal Hair Shampoo

1. It is suitable for delicate skin and all hair types. often has a pleasant, natural aroma from plants and essential oils.
2. It is environmentally beneficial because it is less hazardous and biodegradable.
3. It stops hair loss and split ends when used consistently. offers hair a glossy structure and a natural luster.
4. Reduces dandruff, scalp irritation, and itching by using natural antifungal and antibacterial herbs.
5. Prevents dryness and roughness by preserving the natural oils on the scalp.
6. Promotes hair development by improving blood circulation and nourishing hair roots.
7. Is kind to the scalp and hair because it doesn't include harsh chemicals like sulfates or parabens.
8. Made with natural plant extracts including bhringraj, hibiscus, neem, amla, and aloe vera.

• Types of Shampoo

1. Specialized Shampoo :
 - Baby Shampoo
 - Two Layer Shampoo
 - Anti - dandruff Shampoo
 - Conditioning Shampoo
2. Liquid Shampoo
3. Powder Shampoo
4. Cream Shampoo

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5. Lotion Shampoo
6. Jelly Shampoo
7. Aerosol Shampoo

ANATOMY OF HAIR

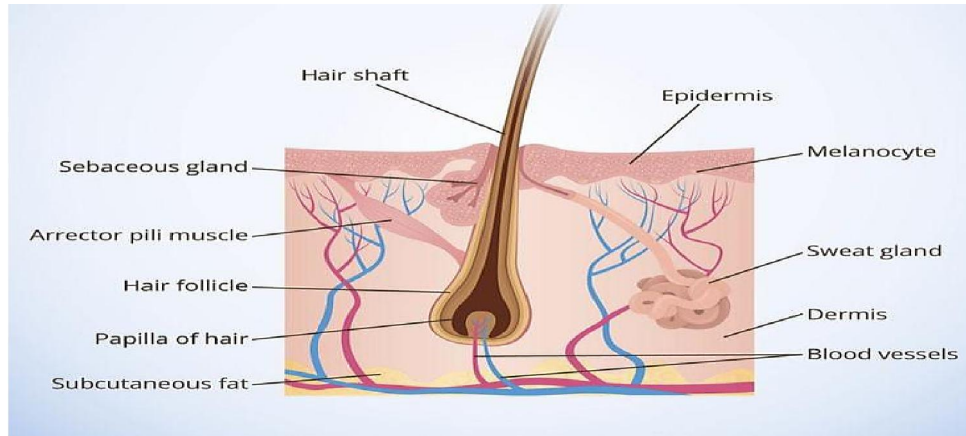


Fig.2 Anatomy of Hair

1. Hair Shaft: The part of hair that is visible above the skin.
2. Hair Root: The section of hair that is found inside the hair follicle, which is a tiny pocket beneath the skin.
3. Sebaceous Gland: A little gland at the base of the hair that secretes oil. It creates sebum, or oil, which keeps hair smooth and glossy.
4. Dermal papilla: The base of the hair root is called the dermal papilla. It supplies nutrition to the hair through blood vessels.
5. Nerve: Makes it easier to feel touch or pain via the hair.
6. Blood Vessels: These supply oxygen and nutrients to the hair root to encourage development.
7. Sweat Gland: Generates sweat to keep the body cool.
8. The hair structure within the shaft: The cuticle, or outer layer, protects the hair. The cortex, or middle layer, is what gives hair its strength, color, and texture. Fine hair occasionally lacks the medulla, or inner core.

• Main Ingredient



Fig.3 Shikakai



Synonyms : Soap nut , Soap pod

Biological Source: Shikakai consists of the dried pods, leaves, and bark of the climbing shrub *Acacia concinna*.

Family: Fabaceae

Chemical Constituents: Saponins, Spinasterol , Acacic acid, Citric acid, Ascorbic acid.

Uses: Hair care for cleansing, strengthening roots.

Mechanism of Action of Shikakai on Hair

1. Mild Natural Cleansing Action

Shikakai contains natural saponins (mild foaming compounds).

These saponins bind to dirt, oil, and impurities on the scalp and hair and help remove them gently.

Unlike synthetic shampoos, it does not strip natural oils, so hair remains soft and moisturized.

2. pH-Balancing Effect

Shikakai has a slightly acidic pH similar to the scalp's natural pH.

This helps maintain scalp acidity, which prevents dryness, itching, and dandruff.

• Other Ingredients

1) Amla



Fig. 4 Amla

Synonym: Indian gooseberry

Biological source: It consist of fresh or dried fruit of plant *Emblica officinalis*

Family: Euphobiaceae

Chemical constituents: Vitamin C, Ellagic Acid, Gallic Acid.

Uses: Boost hair growth, Rich in anyioxidants.

2) Hibiscus



Fig 5 Hibiscus



Synonyms: Shoe flower, China rose

Biological Source: It consists of the flowers and leaves of *Hibiscus rosa-sinensis* Linn.

Family: Malvaceae

Chemical Constituents: Delphinidin, Cyanidin-3-sophoroside, B-sitosterol, Vitamin C

Uses: It reduce dandruff, Add shine and to promote growth of hairs.

3) Curry Leaves



Fig. 6 Curry Leaves

Synonyms: Kadi patta, Curry leaf tree.

Biological Source: It consists of the leaves of the plant *Murraya koenigii* Linn.

Family: Rutaceae.

Chemical Constituents: It is source of vitamin A, B, C and E. It also consist of calcium, iron, copper.

Uses: Moisturizing the scalp and reduce the hair fall .

4) Coconut Oil



Fig. 7 Coconut Oil

Synonyms: Coconut Palm Oil

Biological Source: It consists of the oil of *Cocos nucifera* Linn

Family: Arecaceae.

Chemical Constituents: It consists of medium chain triglycerides such as lauric acid.

Uses: Moisturizing agent, Anti inflammatory agent.



5) Reetha



Fig. 8 Reetha

Synonyms: Soapberry, Soapnut.

Biological Source: It is the dried fruit of *Sapindus mukorossi* Gaertn.

Family: Sapindaceae

Chemical Constituents: Sapindoside A and B

Uses: Enhance shine and smoothness of hair.

EVALUATION OF HERBAL SHAMPOO:

1. Physical Appearance: Shampoos are rated by customers according to their color, clarity, and odor.
2. pH: Using a pH meter, the shampoo's pH values in 1% and 10% solutions at room temperature were determined to be 7.12 ± 0.24 °C.
3. Foaming ability and foam stability: The foam's ability to form and its stability. The cylinder shake method was used to evaluate foaming ability. Fifty milliliters of the 1% shampoo solution were added to a 250 milliliter graduated cylinder. After covering the cylinder with the hand and shaking it ten times, the outcomes were recorded. The total volumes of the foam contents after a minute of shaking. The foam volume was the only thing calculated. After four minutes of shaking at one-minute intervals, the volume of foam was immediately measured.
4. Determine percent of solids contents: Determine the mixture's solids percentage. After being weighed, four grams of herbal shampoo were put on a clean, dry evaporating plate. The evaporating dish containing the shampoo was placed on the hot plate until the liquid was gone, and only the exact weight of the shampoo was ascertained. The weight of the shampoo's solids alone was measured after it had dried.
5. Skin Irritation Test: After cleansing the skin, a prepared herbal shampoo was applied for five minutes to check for inflammation or skin irritation.
6. Dirt dispersion test: A test bottle is filled with around 1% shampoo solution and one drop of India ink. After stopping it, shake the test tube for approximately five minutes. The amount of ink in the foam is indicated by none, light, moderate, or heavy.

II. CONCLUSION

The shampoo's recipe not only increased hair development and considerably reduced hair loss during combing, but it was also safer than chemical conditioning agents. The pH of the shampoo was calibrated to 5 in order to maintain the acidic environment of the scalp. To reduce the risk of chemical preservatives, a physicochemical technique is used to maintain the formulations. However, the visual attributes of the laboratory shampoo, such as lather and clarity, differ from those of the shampoos sold in stores. The foam's volume is one par. It seems doubtful that herbal shampoos will be widely used in the current market, even though they are safer and perform better than synthetic shampoos. Formulators must actively educate consumers about the potential drawbacks of synthetic detergent in shampoos.



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