



CODEN [USA]: IAJPBB

ISSN : 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**

SJIF Impact Factor: 7.187

<https://doi.org/10.5281/zenodo.18788695>Available online at: <http://www.iajps.com>

Research Article

**“PREPARATION AND EVALUATION OF HERBAL
SHAMPOO USING BHRINGRAJ, AMLA AND ALOEVERA”****Syamala Yarramsetti¹, Kusuma kumari Pitta², Hima Bindu Pothanaboina³, Navya Mukku⁴, Nazeera Shaik⁵, Bhargavi kanaka Punyavathi Terli⁶, Dr. Y.A Chowdary⁷**
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himasai07@gmail.com , shaiknazeera900@gmail.com ,**Abstract:**

Among cosmetic formulations, herbal shampoo is the most popular due to its safety, effectiveness, and low side effects compared to synthetic shampoos. The current research examines the use of Amla, Aloe vera, and Bhringraj in the formulation and analysis of an herbal shampoo. They are traditionally used for hair and scalp treatment and known for its health benefits. The vitamin C and antioxidants found in Amla are effective in promoting hair growth, preventing the formation of hair, and strengthening hair follicles. Aloe vera provides the scalp with moisturizing, soothing and conditioning properties, along with enzymes, amino acids, vitamins and mucilage. Bhringraj is renowned for his abilities in promoting hair growth, reducing dandruff, and preventing premature greying. She used herbal shampoo infused with chosen herbs and natural preservatives to clean, clear and firm the hair. The physical appearance, pH, viscosity, foam height and stability (ammonia and chloroform), foam stability, wetting time, and dirt dispersion test were all used to evaluate the prepared formulation. Other physicochemical parameters of this formulation are also listed here. It was found to have a good cleansing capability, acceptable foaming properties, suitable pH, and good conditioning performance in the prepared herbal shampoo. They stated that the shampoo was stable, safe and effective without any irritation. The product is FDA-approved. The study suggests that herbal shampoo containing natural ingredients can be an effective and environmentally conscious option to synthetic shampoos for hair and scalp health.

Keywords: Herbal shampoo, Amla (*Emblca officinalis*), Aloe vera (*Aloe barbadensis*), Bhringraj (*Eclipta alba*), Herbal cosmetics, Natural conditioner.

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Please cite this article in press Syamala Yarramsetti et al., Preparation And Evaluation Of Herbal Shampoo Using Bhringraj, Amla And Aloe vera., Indo Am. J. P. Sci, 2026; 13(02).

INTRODUCTION:

The hair-care product known as a Shampoo is intended to clean the hair and scalp in the most efficient way. This is primarily used for the purpose of removing dirt, sebum, sweat glands, dead skin cells, product buildup, and environmental pollutants that accumulate on the scalp during everyday activities. Maintaining good scalp hygiene is crucial for the proper growth, strength, and control of hair. Maintaining hair's cleanliness, shine, and volume is possible with regular shampoo usage.

The purifying properties of shampoo are attributed to surfactants. The combination of oil and water can result in the formation of surfactants. When applied to wet hair and pushed into the scalp, surfactants form micelles that encircle oil, dirt and impurities. These micelles are eliminated by washing off water, leaving the scalp and hair uncontaminated. To improve softness and reduce tangles, modern shampoos often contain conditioning agents in addition to cleansing agents. They can also be multifunctional, and may contain fragrances or targeted active ingredients to address specific issues such as dandruff, dryness, hair fall, frizz, or chemical damage in hair.



ANATOMY OF HAIR

The hair is made up of 95% keratin a fibrous, helicoidal protein (shaped like a helix) that forms part of the skin and all its attachments (body hair, nails etc.). The hair structure consists of 3 different parts:

Medulla: It is the innermost layer of the hair shaft, made up of an amorphous, soft, oily substances.

Cuticle: Thin protective outer layer that contains nutrients beneficial for hair growth. It is highly keratinized with cells shaped like scales that are layered one over the other, measuring about 60 micro-meters long and about 6 micro-meters wide.

Cortex: It is the main constituent of the hair, containing long keratin chains which gives elasticity, suppleness and resistance to the hair. The cells of the cortex are joined together by an intercellular cement rich in lipids and proteins.

Function of Hair Follicle :-

The hair follicle is essential for producing and sustaining hair growth. This structure also contributes to various skin functions and responses.

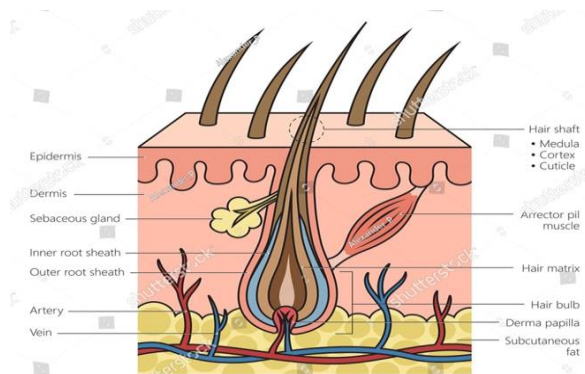


Fig:2 Anatomy of Hair

Sensory and Protective Functions

Hair follicles have nerve endings, making them sensitive to touch and vibrations. Hair follicle sensations help people detect external stimuli and respond appropriately. Hair also provides a physical barrier that helps protect the skin from environmental damage, UV radiation, and mechanical injury.

Thermoregulation

Hair helps maintain body temperature by providing an insulating layer, which is particularly important in mammals with dense fur, as fur traps heat and reduces heat loss in cold environments. Hair aids in dissipating heat through mechanisms like sweating, influencing the efficiency of these cooling processes.

Wound Healing and Skin Regeneration

Hair follicles are crucial in wound healing and skin regeneration. Stem cells from the hair follicle bulge can migrate to the epidermis to aid in tissue repair. Additionally, hair follicles release various cytokines and growth factors that promote cellular proliferation and tissue repair during wound healing.

Endocrine Function

Hair follicles respond to various hormones, influencing hair growth, density, and distribution. For instance, androgens play a significant role in the development of male pattern baldness. Hair follicles secrete sebum, an oily substance produced by sebaceous glands associated with the follicles. Sebum helps lubricate and waterproof the hair and skin.

Immune Response

The hair follicle, particularly the bulge region, is an immune-privileged site. The hair follicle can suppress immune responses to

ADVANTAGES OF HERBAL SHAMPOO.

1. Gentle Cleansing Action: Mild and natural herbal shampoos for hair & scalp, gentle cleansing. Those natural cleansing agents in the form of herbs remove dirt, oil and other impurities naturally without leaving behind hair coverings. The use of herbal ingredients helps to keep hair soft and healthy, as they don't strip away essential natural oils like detergents.

2. Nourishment of Hair and Scalp: Natural vitamins, minerals, amino acids, and antioxidants are present in herbal shampoos. Nutrients that go into the hair roots and scalp are essential. It enhances hair follicles and leads to improved, healthier hair growth.'

3. Promotion of Hair Growth: Several herbal remedies promote blood circulation in the scalp, which helps to deliver oxygen and nutrients to hair follicles. The benefits. By stimulating hair follicles, the stimulation stimulates the growth of new hair. Herbal shampoo can promote hair growth and thickness.

4. Reduction of Hair Fall: Herbal shampoos are effective in strengthening hair roots and the hair shaft. Natural plant substances promote hair follicle stability and minimize hair breakage.' The use of herbal shampoos can help to reduce hair fall and hair thinning by providing scalp health benefits.

5. Prevention and Control of Dandruff: Antifungal and antibacterial agents found in herbal shampoos are effective against dandruff and scalp infections. Why? These ingredients can minimize scalp irritation, itching, and flaking.' Dryness and dandruff can be prevented by herbal shampoos, which also aid in scalp moisture balance.

6. Maintenance of Natural Hair Moisture. The use of herbal shampoos promotes hair growth and moisture. These safeguard against excessive dryness and prevent hair from becoming brittle. Additionally, Herbs can be used as natural conditioning agents to improve hair elasticity and density.

DISADVANTAGES OF HERBAL SHAMPOO

While herbal shampoos can provide benefits, there are some disadvantages that consumers should be mindful of. Listed below are some significant shortcomings, along with supporting evidence:

1. Efficacy Variability: can vary greatly depending on the concentration and formulation of the active ingredients in herbal shampoos. Certain items may not provide the desired effect, especially if they contain inadequate quantities of beneficial herbs or unless the herbs are used by users.

2. Allergic Reactions: Herbal Ingredients may be considered safer, but some individuals may experience allergic responses. Why? The use of essential oils and herbal extracts can lead to skin reactions or sensitization, particularly in those with pre-existing skin conditions. Before applying the product in its entirety, consumers should conduct

patch tests to ensure that they are not affected by adverse effects specific to their hair types due to the variability that can result in inconsistent results.

3. Insufficient Control: The production of herbal cosmetics is not subject to the same level of regulation as conventional ones. Unregulated regulations can result in inconsistent quality and labeling for herbal products, making it difficult for consumers to determine their concentration and potency.

4. Lack of Regulation: Despite their potential benefits, synthetic herbal shampoos may have limited shelf life due to the use of natural preservatives. This can reduce the longevity of products, which may be a result of improper storage. These products may require replacement by consumers."

5. Effectiveness: Traditional shampoos may contain harsh surfactants, but herbal formulas are not recommended for all hair types, including those with oily scalps or sensitive hair that needs more cleansing due to product buildup. Heavy styling products and oily hair may render herbal shampoos ineffective for users.

6. More expensive: Organic ingredients in herbal shampoos can be more expensive than with traditional alternatives. How to use them effectively? Some individuals may not opt for the switch due to the higher cost, especially if they are used to cheaper synthetic products. Products.

HAIR PROBLEMS:

Generally today's society facing hair problems are,

- Hair loss
- Hair Dandruff
- Fungal Infections
- Baldness
- Split ends
- Frizzy hair
- Premature greying
- Hair thinning

AIM:

This study aims to combine traditional Ayurvedic knowledge with modern pharmaceutical formulation techniques to produce a shampoo that not only cleanses the scalp but also promotes overall hair health.

OBJECTIVES

Consumers can expect herbal shampoo products to achieve their desired outcomes. These aims emphasize the exceptional benefits and applications of herbal hair care products: "

1. The primary aim of herbal shampoos is to offer a pure and effective cleansing experience using natural ingredients. Traditional shampoos may contain harmful traces of sulphates, but herbal shampoo's objective is to eliminate dirt, oily

residues, and product buildup without damaging the hair's natural moisture barrier.

2. Herbal shampoos contain beneficial botanicals that are used for nourishment and protection of hair and scalp. The hair is nourished and conditioned with natural ingredients like aloe vera and hibiscus, which help to promote healthy growth and prevent damage.

3. One of the primary objectives is to enhance the overall health of scalp conditions. Tea tree oil and neem, among other antimicrobial and anti-inflammatory ingredients in herbal shampoos, are effective in resolving widespread scalp problems such as dryness, flaking of the skin, and irritation caused by dandruff. The maintenance of hair health is a vital component to consider.

4. Sustainable beauty is often the focus of use with Herbal shampoos. How does this practice work? Consumers who value both natural and biodegradable options can benefit from the use of these products. This aim aligns with the increasing need for sustainable products in the personal care sector. "

5. Cultural authenticity: Traditional herbal knowledge and practices, such as Ayurveda and Traditional Chinese Medicine, are often integrated into herbal shampoos. The goal here is to provide hair care products that not only offer modern benefits but also acknowledge cultural traditions and practices in the industry.

6. The education of consumers regarding the advantages of herbal ingredients and the importance of consuming natural products is an essential

objective. It entails acknowledging the potential drawbacks of synthetic additives and advocating for educated decisions regarding hair treatment.

7. Reducing excess grease while minimizing drying with Oil Balance.

8. Nutrition: Nutrient delivery including vitamins, proteins and minerals....

9. Smoother, more comfortable and smooth hair texture.

10. Preserving Hair Color: Helps maintain natural shades.

11. Staining: Adding shine and refinement.

12. Creating evidence of the product's safe and consistent use.

MATERIALS AND METHODS:

The herbal shampoo was created using natural herbal extracts that are effective at promoting hair growth and conditioning.

- Reetha
- Shikakai
- Bhringraj
- Hibiscus
- Amla (Gooseberry)
- Fenugreek
- Aloe vera and Rice water are the sources of ingredients.

Herbs such as these contain saponins, flavonoids, alkaloids and vitamins that help to clean the scalp, promote hair growth and prevent dandruff and hair loss.

Formulation of Herbal Shampoo For 100 ml

Ingredients	Quantity	use
Reetha powder	8gm	Anti bacterial, Antifungal
Shikakai powder	6gm	Controlling hair fall, dandruff
Neem powder	4gm	Anti fungal agent Reduce itching
Bhringraj powder	4gm	Prevents premature greying
Hibiscus powder	5gm	Gives shine and soft ness, Nourishes hair fall
Amla powder	5gm	Antibacterial, Antifungal, Booster hair growth
Fenugreek powder	3gm	Promotes hair growth Prevent hair fall
Rice	25ml	Strengthen hair roots
Aloe vera	5gm	Cleaness hair and scalp, Promote hair growth

Table:1 Formulation

PROCEDURE:

Aqueous Extraction Method Preparation Technique:

Step 1: Choosing the right herbal ingredients.

Herbal ingredients that are fresh and wholesome were chosen.

The herbs used included: Reetha. Shikakai. Neem. Bhringraj. Hibiscus. Amla. Fenugreek.

Step 2: Weighing of Ingredients. Every herb component was weighed with precision. To ensure proper formulation, the required quantities were measured.

Step 3: Soaking of Ingredients. The herbal ingredients that were weighed were completely soaked in water. Overnight soaking followed for around 8-10 hours. Soaking softens plant materials by releasing active components.

Step 4: Prepare Rice Water. The rice was soaked with water overnight. Rice water is a natural conditioner. Filtration and gathering of the soaked rice water took place.

Step 5: Mixing of Ingredients. Herbal substances were added to the rice water. It was placed in a clean container.

Step 6: Boiling the Mixture. The combination was cooked on a medium-low heat. It took about 30 minutes to boil the mixture again. It was boiled until the liquid had reduced to roughly 100 ml. Extracting the active ingredients from herbs is made possible by this.

Step 7: Cooling. The boiled mixture was left to cool completely at room temperature. The active components are not subject to degradation when cooled.

Step 8: Filtration. Muslin cloth was used to filter the mixture after it had cooled. Optical cleaning removes solid residues and impurities. Clear herbal extract was obtained.

Step 9: Collection of Extract. A clean container was used to collect the filtered extract. Extract was employed in the production of herbal shampoo.

EVALUATION TESTS OF HERBAL SHAMPO

1. Organoleptic Evaluation

Parameters: Color, odor, appearance, texture.

End result: Brown colour, pleasant herbal smell and a smooth texture with no impurities. "

2. pH Determination

The process involved measuring the pH of a 10% shampoo solution. The optimal range for scalp pH is around 5 - 6.



Fig:4

Result: Good and balanced pH (sharp and scalp comfortable).

3. Foam Stability Test.

Measurement of foam volume after a given period. Foam held firm for several minutes.



Fig:4

4. Wetting Time Test.

Method: Canvas disc method. The observation indicates a certain amount of time for the disc to sink. The more wetting time the surfactant, the better.

5. Surface Tension Test.

Method: Measured using stalagmometer. End result: Surface tension reduced, good cleansing action.

6. Microbial Test. Result: No microbial growth detected.



Fig:5

RESULTS AND DISCUSSION:

The prepared herbal shampoo showed good organoleptic properties with pleasant odor, brown color, and smooth texture, indicating good formulation quality. The pH was found to be 5.5–6.0, which is suitable for scalp and hair. The shampoo produced stable foam and showed acceptable wetting time, confirming good cleansing ability. Surface tension was effectively reduced, indicating proper surfactant activity. No microbial growth was observed, proving the formulation is safe and free from contamination. Overall, the herbal shampoo showed satisfactory evaluation results and is suitable for hair care use.

CONCLUSION:

The formulated shampoo has antimicrobial and antifungal properties that help to minimize hair loss while strengthening hair growth. To prevent the scalp's acidic nature, the shampoo was made to have a pH level of 6.5. The method of physicochemical preservation employed to prevent the use of chemical preservatives, versus this aspect. Marketed shampoos have no similar clarity as the laboratory-stored shampoo. Even if herbal shampoo is safer and more effective than synthetic ones, it seems unlikely that consumers will continue to choose the former. It is the formulators' responsibility to modify the consumer's perception of a good shampoo. According to the study, herbal shampoo is an all-natural, safe, and effective option to synthetic shampoos that lacks harsh chemicals such as bleach, parabens or chlorine, while also providing beneficial benefits like scalp protection

(smoke), hydration, anti-age, speedy regrowth, healthy hair, etc.

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