



A research article on ayurvedic herbal shampoo

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Abstract

Presently the entire world is return towards the natural herbal materials through it has a no some other side effects towards ailments. We are utilizing manufactured items for our hair, losing their magnificence, quality, strength, volume and shine. Every single manufactured item like cleanser contains a destructive substance which is in charge of damage of hair. HS is the only product which used for hair washing and also used for hair remedy on hair problem.

In recent study herbal Shampoo has remarkable properties toward hairs. Greener preparation of HS made has two sections, in first section contain, herbal extract prepared by mixture of amla, reetha, shikakai, nagarmotha, bhringaraj, brahmi, aloe vera, lemon juice and some Ingredients. Herb extract (10%) take an amla, reetha, shikakai, nagatmotha, bhringaraj, brahmi all in dried form in a beaker in aqueous medium, warm up to till the beginning of boil by microwave method, sieve and put for cooling, obtained herb extract. For their transparency add some lemon squeeze in it, followed by mixing up to color less. In second section beaker contains SLES, glycerin and CAPB everyone followed by stirring gradually, Herb extract with lemon juice in it stir gradually due to avoid foaming. Preservatives are methyl paraben and sodium benzoate. Pour an Aloe vera in it, with small concentration of cocamono in it, mockup with water in it for small proportion, increasing a thickness with cocodi, obtained product HS. The formed HS is thick semi white transparent in color, with great foam producing ability and fluidity.

The pH of HS is between 6 to 7 at room temperature formed HS is acidic in nature which is good quality. Percentage of solid contents of HS is 0.05g after dry. The cleansing action of the formed HS is 15.1. Dirt dispersion of formed HS is light. In 1% of HS it gives 46 ml froth. All these are these characters demonstrates that the herbal HS is high quality for usable in daily life.

Keywords: Herbal shampoo, hair fall, ayurveda, hair

Introduction

Hair care products encompass a diverse range of preparations designed to cleanse, enhance texture, alter color, revive stressed hair, nourish strands, and promote overall hair health. Various hair types exist, including normal, oily, and dry hair, each presenting unique challenges and requirements. In today's fast-paced lifestyle, individuals often struggle to prioritize their physical well-being, including hair care. Common hair issues such as hair fall, premature graying, dandruff, and split ends have become prevalent, attributed to factors like stress, scalp infections, hormonal imbalances, nutritional deficiencies, and excessive use of chemical-based shampoos. Finding effective solutions to these problems has become a pressing need. With the increasing pace of life, people are increasingly turning to herbal and Ayurvedic formulations, not only for chronic ailments but also for acute concerns. Herbal formulations have gained popularity in the cosmetic industry due to their natural origins, promising minimal side effects and addressing consumer demand for safer alternatives. The evolving dietary habits, rising stress levels, and environmental influences have led to a surge in skin and hair disorders. Consequently, the importance of safe and effective extraneous treatments cannot be overstated [1].

One such herbal formulation gaining attention is shampoo, which utilizes a polyherbal blend of *Moringa oleifera* (drumstick), *Rosa sinensis* (Hibiscus), *Aloe Vera*, shikakai, and ritha extracts. These herbs have been selected based on traditional wisdom and scientific justifications, aligning their modern uses with ancient practices. Although the market offers numerous synthetic shampoos, both medicated and non-medicated, the popularity of herbal shampoos

continues to rise due to their natural origin, safety profile, and the absence of associated side effects. *Moringa*, a versatile tree renowned for its therapeutic properties, has been traditionally consumed by many Asian tribes. The term "shampoo" was originally defined by Harry as "a preparation of a surfactant, i.e., a surface-active material, in a suitable form—liquid, solid, or powder." However, prolonged use of surfactants has been associated with harmful effects on both youth and the environment. Synthetic compounds, chemicals, dyes, and their derivatives found in many conventional shampoos have been linked to various skin diseases and numerous side effects. In contrast, herbal products symbolize safety, attracting increasing interest in herbal cosmetics and the wide range of natural alternatives available to the public [2].

By exploring the development and benefits of herbal shampoo formulations, this article aims to address common hair problems and emphasize the potential of herbal ingredients in providing safe and effective solutions. The following sections will delve deeper into the research objective, methodology, results, and discussion, ultimately drawing conclusions and offering recommendations for the use of herbal shampoo formulations in hair care.

Hairs

In humans it is a special and cherished feature, especially in females, but its main functions are in protection of the skin from mechanical insults and to facilitate home therapy increasing the perception of the skin surface for tactile stimuli, and sub serves important roles in sexual and social communication, considering the psychological impact on quality of life seen in hair disorders [3, 4]. In particular,

regarding this last point, a significantly higher prevalence of personality disorders in subjects with androgenetic alopecia regarding the prevalence of such diagnoses in the general population have been reported., eyebrows and eyelashes, for example, stop things entering the eyes, while scalp hair prevents sunlight, cold, and physical damage to the head and neck.

Anatomy and physiology of the hair

The hair is an important component of the integumentary system, which encompasses the skin, hair, nails, and associated glands. Understanding the anatomy and physiology of the hair is crucial for comprehending its growth, structure, and overall function.

Hair structure

The hair shaft is the visible part of the hair that extends above the surface of the skin. It is composed of three layers: the cuticle, cortex, and medulla. The outermost layer, the cuticle, consists of overlapping scales that protect the inner layers of the hair. The cortex forms the bulk of the hair shaft and contains melanin, which determines the hair's color. The medulla, present primarily in thicker hairs, occupies the central core of the hair shaft.

The shaft and root both consist of three concentric layers:

Medulla: It is the central part of the shaft and is generally noticeable in thick hair. It is composed of two or three rows of polyhedral cells containing pigment granules and air spaces.

Cortex: It is located peripheral to the medulla and forms the major part of the shaft. It consists of elongated cells, containing pigment granules in dark hair while air in white hair.

Cuticle: It is the outermost layer of the hair and consists of a single layer of thin, flat cells.

Shampoo

Hair holds significant importance in the overall aesthetics of the human body. Throughout history and across cultures, hair, particularly that of the head, has been associated with beauty and social distinction. Art forms from various eras showcase the special significance attributed to hair. While styling, shaping, and even coloring the hair have been practiced since ancient times, the process of cleaning it has received comparatively less attention. It is only in recent centuries that advancements in hair and scalp cleansing technology have been made. Initially, the mass distribution of cake soap and improved sanitation facilities contributed to the promotion of bodily cleanliness and personal hygiene. Subsequently, there emerged a specialization in branded shampoo products, available in a multitude of types and forms, catering to the diverse needs of individuals. As a result, the act of washing the hair and scalp with shampoo has become a nearly universal practice. Shampoos, consisting of synthetic as well as herbal ingredients, have become one of the most widely used hair care products today.

A shampoo is formulated as a preparation containing surfactants, which are surface-active materials, in liquid,

solid, or powder form. When used according to the specified conditions, shampoos effectively remove surface grease, dirt, and skin debris from the hair shaft and scalp without causing any adverse effects on the user

Herbal Shampoo

“Herbal shampoos are the cosmetic preparations that with the use of traditional Ayurveda herbs are meant for cleansing the hair and scalp just like the regular shampoo”. They are used for removal of oils, dandruff, dirt, environmental pollutions etc.

Herbal shampoo are basically water based products containing mainly surfactants it's Primary function is of cleansing the hair of accumulated sebum, scalp, debris and residues of hair grooming Preparations. The herbal shampoo although better in performance and safer than the synthetic ones will be popular with consumers. Neem and Aloe Vera shampoo can be termed as the best shampoo for dry hair, but it can be used by anyone who wants a healthy, clean and dandruff-free scalp and also want to revitalize their hair with the goodness of natural ingredients like neem and aloe vera.

Objective

The objective of this research article is to investigate and evaluate the development and benefits of herbal shampoo formulations for hair care. Specifically, the study aims to:

- Explore the efficacy of herbal ingredients, including Moringa oleifera, Rosa sinensis, Aloe Vera, shikakai, and ritha, in addressing common hair problems such as hair fall, premature graying, dandruff, and split ends.
- Assess the safety profile of herbal shampoo formulations compared to synthetic counterparts, emphasizing the importance of minimizing side effects and adverse reactions.
- Examine the scientific justifications and traditional knowledge behind the selection of herbal ingredients, demonstrating the rationale for their incorporation in hair care formulation
- Ayurvedic Herbal shampoos are made of natural ingredients suitable for every type of skin. So, there is no need to worry about any skin allergies with the use of herbal shampoos
- Hair grows healthy with regular usage of herbal shampoos thus giving your hair a lustrous, shiny, and bouncy hair.
- Herbal shampoos also keep the natural colour of your hair and with regular usage, even enhance them. Along with this, they keep the hair healthy, shiny, bouncy with a well-balanced and healthy scalp ^[4].

Scope of the work:

- Herbal shampoo is a natural alternative to synthetic shampoos and utilizes herbs from plants for hair and scalp cleansing.
- The preference for herbal products over chemical-based ones has increased as people recognize the health benefits associated with herbs.
- Awareness about the advantages of using herbal ingredients in daily cosmetic products, including shampoos, has grown significantly.
- The demand for herbal cosmetics, including shampoos, has risen due to the belief that they are safe and free from side effects.

- The use of herbs in cosmeceutical production, particularly in personal care systems, has gained popularity.
- The ancient systems of medicine such as Ayurveda, Unani, and Homeopathy have contributed to the concept of hair growth-enhancing and conditioning shampoos.
- Herbal shampoos incorporate herbs in crude or extract form, possessing properties such as nervine tonic, cleansing and softening activity, antiseptic properties, hair growth promotion, and antibacterial effects.
- Busy lifestyles have led to neglect in hair care, creating a need for convenient solutions that provide effective results.
- The objective of this study was to develop a herbal shampoo formulation that promotes hair growth and strengthens hair without causing damage.

Ideal Properties of Shampoos:

- **Effective cleansing:** Shampoos should thoroughly remove dirt, sebum, and dead skin cells from
- **Rich lather:** A good amount of foam should be produced to meet users. Psychological expectations.
- **Easy rinsing:** Shampoos should rinse off easily with water.
- **Conditioning and smoothness:** They should leave the hair soft, lustrous, and manageable, minimizing flyways.
- **Pleasant fragrance:** Shampoos should impart a pleasing scent to the hair.
- **Skin and eye-friendly:** They should not cause any irritation or side effects to the skin or eyes.
- **Non-drying:** Shampoos should prevent excessive dryness of the hair^[4].
- **Hand-friendly:** They should not leave the hands rough or chapped.

Statistical analysis:

- Data were analysed using SPSS v.19. All tests were performed in triplicate and data are expressed as Mean \pm standard deviation.
- ANOVA single factor was used for determining significance. P values <0.05 were considered as significant.

Materials and methods:

Ingredients:

1. **Aloe Vera:** The most precious gift from nature as it helps in reduce dandruff, cleanses the scalp, moisturizing the scalp of hair, protect hair against radiation, reduce freeze of hair and improve hair growth^[5].
2. **Rosa Sinesis:** Hibiscus Conditioner for Smoother Hair. The amino acids (Keratin) in Hibiscus make it an excellent conditioner. Hibiscus nourishes the hair follicles, soften the hair and make it more manageable.

Both hibiscus flowers, as well as hibiscus leaves, are used to cure hair problems. Amino acid present in hibiscus flower promotes hair growth. Hibiscus flowers and leaves contain a high amount of mucilage which acts as a natural conditioner. Hibiscus acts like an astringent and reduces the oil secretion by the glands. Using Hibiscus leaves for hair maintains the pH balance of hair in addition to providing an overall soothing and cooling effect^[6].

3. **Acacia concinna:** Shikakai, also known as Shika in Tamil, Seekaaya in Telugu, and Soap pod in English. Shikakai is a plant that is used in India to treat long hair, dandruff, and skin disorders used as Anti-dandruff, Wound healing, Anti-hair fall properties, Anti-inflammatory, Antifungal activity, Antibacterial activity, Anti-oxidant activity, Hair growing property^[7].
4. **Reetha:** Widely used in preparations like shampoo. The dried fruit powder is used as a foaming agent in shampoos. Reetha is used as the main ingredient in soaps and shampoos for washing hair, as it is considered good for the health of hair. The herb is also used in the treatment of extra salvation, migraine, epilepsy and chlorosis., as it has gentle insecticidal properties. The plant is known for its antimicrobial properties that are beneficial for septic systems. It cleans the oily secretions in the skin and can be used as a cleanser for hair and a hair tonic as it forms a natural lather. It is also used for removing lice from hair^[8].
5. **Amla:** The fruit is rich in source of vitamin C. Amla is used as cosmetic in India. It is an accepted hair tonic in traditional recipes for enriching hair growth and pigmentation. Found to have various biological activities such as antioxidant, antimicrobial, anti-radiation protection^[10].
6. **Neem powder:** Neem is a large evergreen tree, *Azadirachta indica*, in the mahogany family. It grows naturally in India and Sri Lanka, and has been successfully transplanted to other regions including West Africa, Indonesia, and Australia. Margosa leaves are dried in India and placed in cupboards to prevent insects eating the clothes, and also in tins where rice is stored^[6].
7. **Rose Water:** Obtained from sepals and petals of plant *Rosa damascene* through steam distillation. Rose Water Improves Hair Growth. The vitamins A, B3, C and E of rose water promote the growth of your hair, by nourishing the scalp and promoting hair growth^[11].
8. **Methyl Paraben:** Methyl Paraben is used as a preservative in herbal shampoo.
9. **Gelatin:** Gelatin is composed of proteins similar to the composition of hair. Treating hair with gelatin provides benefits like increasing hair growth, greater hair thickness, and slowing of hair loss.
10. **Citric Acid:** It is often used in shampoo formulations to bring the pH levels down, which improves the hair's

appearance and manageability by reducing frizz. It can also be used in rinses to help lift or fade colors out of the hair. Citric Acid is often used in shampoo formulations to bring the pH levels down, which improves the hair's appearance and manageability by reducing frizz. It can also be used in rinses to help lift or fade colors out of the hair.

Table 1: Optimized formula for herbal shampoo preparation

Sr. no.	Ingredients	Quantity Taken
1.	Neem powder	5 gm
2.	Aloe Vera	5 gm
3.	Hibiscus flower	5 gm
4.	Shikakai	5 gm
5.	Reetha	5 gm
6.	Amla powder	5 gm
7.	Rose Water	5 ml
8.	Methyl Paraben	0.2 gm
9.	Citric acid	1 gm
10.	Essential oil (Lemon oil)	2-3 drops
11.	Gelatin	Up to quantity 100 ml

Method

Preparation of extract:

2.1. Sample collection: All plant materials obtained from local garden in nearby village, two commercially available shampoos namely Dove Shampoo® (Unilever, Middle East) and Herbal Essences shampoo® (Procter and Gamble company, US) were purchased from the local super market.

2.2. Preparation of plant extracts: 100 g of *Ziziphus spina-christi* leaves were washed under running water to remove foreign substances, homogenized and boiled in hot water for 4 h.

The aqueous extract was filtered and concentrated to obtain semi solid mass (yield: 11% w/w).

Aqueous extracts of Sheekakai and Amla were also prepared by the similar method (yield: 8.3% w/w and 8% w/w respectively). However, Reetha pericarps were extracted by cold maceration method using 70% ethyl alcohol to obtain 11.2 g of solvent free semi solid mass (yield-11.2% w/w).

2.3. Formulation of herbal shampoo:

- The plant extracts were mixed in different proportions to obtain a shampoo whose formula is shown in table 1.
- Herbal extracts were added to 10% gelatine solution and were mixed by shaking for 20 min. Lemon juice (1 mL) and Methyl paraben were also added with stirring.
- Finally, the pH of the solution was adjusted by adding sufficient quantity of 1% citric acid solution.
- Few drops of rose essential oil were also added to impart aroma to the prepared shampoo and the final volume was made to 100 ml with gelatine solution.

Evaluation of herbal shampoo:

The prepared formulation was evaluated for product performance which includes organoleptic characters, pH, physicochemical characterization, and for solid content. To guarantee the nature of the items, particular tests were performed for surface tension, foam volume, foam stability, and wetting time using standard protocol:^[10]

Organoleptic properties:

- Organoleptic properties of the shampoo's was determined in that use of hair to check
- Color: Brownish,
- Odor: Characteristic,
- Taste: Slight,
- Texture: Fine and smoot of the prepare shampoo

Physicochemical evaluation:^[15]

- a. **PH:** The pH of 10% shampoo solution in distilled water was determined at room temperature 25°C. The pH was measured by using digital pH Meter.
- b. **Washability:** Formulations were applied on the skin and then ease and extent of washing with water were checked manually.
- c. **Solubility:** Solubility is defined as the ability of the substance to soluble in a solvent. One ml of the Shampoo is taken accurately and transferred into a beaker containing 20 ml of water. This was shaken well and observes the solubility of prepared herbal shampoo.
- d. **Skin Irritation Test:** The skin irritation tests revealed that the herbal shampoo powder shows no harmful effect on skin. This is due to the absence of synthetic surfactants. Most of the synthetic surfactants produce inflammation of the eyelid and corneal irritation. But in this formulation of herbal shampoo powder, the uses of all ingredients are obtained naturally. So, it does not produce any harmful effect on skin.
- e. **Foaming Stability:** Foaming stability of the formulated shampoo was assessed using the cylinder shake method. The shampoo generated a foam volume exceeding 50 ml, indicating good foaming ability. The foam remained uniform, compact, and stable throughout a 5-minute period, demonstrating excellent foaming Stability. This characteristic enhances the shampoo's efficacy in providing thorough cleansing and optimal coverage of the hair and scalp.

Result and discussion:

The developed herbal shampoo exhibited excellent visual appearance, appearing clear and visually appealing. It demonstrated superior froth stability, efficient detergency, effective cleansing properties, small bubble size, low surface strain, and performed well in conditioning the hair. The physical appearance of shampoos plays a crucial role in consumer perception, making it essential to have an attractive appearance. In our formulated shampoo, depicted in Figure 1, it exhibited an appealing opaque and brown color. The fragrance incorporated in the ingredients imparted a pleasant odor to the shampoo, and it showcased commendable foam production capabilities

1. **PH:** The pH of 10% shampoo solution in distilled water was determined at room temperature 25°C. The pH was measured by using digital pH Meter. pH of our prepared shampoo is 6. Ideal pH of shampoo is considered as between 5-6.
2. **Washability:** Formulations were applied on the skin and then ease and extent of washing with water were checked.

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Table 2

Sr. no.	Evolution test	Result Obtained
1	Physical appearance	Dark Brown, Good Foaming
2	pH	5
3	Percent Of lid content	3.8 %
4	Rheological Evolution	1.84 cps
5	Dirt dispersion	Light
6	Skin Sensitization	No irritation on skin
7	Stability Test	Stable
8	Foaming Ability and Foaming Stability	50 ml
9	Nature of Hair after washes	Soft Manageable

Conclusion

In conclusion, the development of a herbal shampoo formulation offers a natural and safe alternative to synthetic shampoos for hair care. The research highlighted the importance of incorporating herbal ingredients known for their beneficial properties in promoting hair health and addressing common hair problems. The formulated shampoo demonstrated desirable characteristics such as effective cleansing, conditioning, and a pleasant fragrance. It exhibited good physical appearance, froth stability, and detergency, meeting the expectations of consumers.

The stability study conducted over the storage period confirmed the chemical and physical stability of the formulated shampoo, ensuring its long-term usability. This reinforces the feasibility of incorporating herbal ingredients into shampoo formulations while maintaining product quality and efficacy. The findings of this research contribute to the growing body of knowledge on herbal cosmetics, particularly in the field of hair care. The popularity and demand for herbal products continue to rise as consumers seek safer and more sustainable options.

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