

FORMULATION AND EVALUATION OF HERBAL NEEM SHMAPOO POWDER

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ABSTRACT

Shampoos are used for more than just cleaning; they also provide hair a glossy finish and help keep it manageable and oily. There are many different kinds of shampoos, including medicinal shampoo, liquid herbal shampoo, lotion shampoo, solid gel shampoo, powder shampoo, and clear liquid shampoo. Regarding the stability criteria for herbal shampoos. They could be antibacterial, antidandruff, or just a basic shampoo, depending on the contents. Using conventional hair care medications, the herbal shampoo powder generated in this work has been refined. Henna powder, Neem powder, Amla powder, Aloe vera powder, Fenugreek (Methi) powder, Hibiscus powder, Shikakai powder, Reetha powder, and Arappu powder were used to make the preparation, which was then assessed for its organoleptic qualities, powder characteristics, foam test, and physical assessment. The shampoo's physicochemical analysis produced excellent findings. However, more research and development were needed to increase its quality, product performance, and safety. The Creative Commons Attribution- NonCommercial-Share Alike 4.0 License, which permits others to remix, modify, and build upon the work noncommercially as long as proper credit is given and the new creations are licensed under the same terms, governs the distribution of articles published in this Open Access (OA) journal.

KEYWORDS: Herbal shampoo powder, Amla powder, Herbal powder, Bulk density, Tapped Density.

INTRODUCTION

Herbal Cosmetics: Herbal cosmetics are made by mixing several cosmetic substances to form a basis, then using one or more herbal compounds to treat distinct skin conditions. The word "herbal" means that these cosmetics are free of dangerous synthetic ingredients that could damage skin and are instead derived from natural sources. Natural cosmetics are seen as safer to use than traditional beauty products. Contrarily, skincare products known as "cosmeceuticals" combine aspects of pharmaceuticals and cosmetics to improve the health and appearance of skin through the delivery of certain benefits including sun protection, anti-aging properties, and acne control. Depending on the precise functional substances they include, cosmetics can have medical benefits that affect the skin's biological functions. These products are not just for cosmetics; they also treat a variety of skin

problems, improving skin function and texture by encouraging the creation of collagen, scavenging free radical damage, preserving keratin structure, and generally boosting skin health. Naturally occurring, a large range of herbs with cosmetic value are utilized as antioxidants and in skincare and haircare products. Plant-based components with cosmetic value are used in the development of these cosmetics. The use of botanicals in cosmetics has grown recently, mostly because of their non-toxic and mild properties. Both natural and phyto-ingredients are used in cosmetic compositions. Oils, extracts, and secretions are examples of natural components; pure elements obtained through various methods make up phyto-ingredients.

The safety and effectiveness of the henna, neem, amla, aloe vera, fenugreek (methi), hibiscus, shikakai, reetha,

and arappu herbal powders were evaluated in the current study. Since the majority of these herbs were not found in many commercial products, it was chosen to incorporate them into a shampoo and do an assessment.

HERBAL SHAMPOO POWDER

Because shampoos are such an integral part of everyday cosmetic routines, the shampoo sector is perhaps the largest in terms of unit sales within the hair care product category. Adverse effects among consumers have occasionally been attributed to synthetic detergents and preservatives. Using a natural extract whose functionality is equivalent to that of their synthetic chemicals is a more creative way to reduce the synthetic ingredients. Shampoo is one of the main beauty items and is used to help clean hair. The shampoo compositions of today go beyond just cleansing the hair. More advantages, such as conditioning, surface smoothing, healthy hair - that is, hair free of grease, oil, dandruff, and lice - as well as safety advantages are anticipated. Products applied to the scalp have the ability to directly enter the bloodstream without filtering because it is one of the body's most absorbent places. An rising number of skin and hair illnesses have surfaced in an atmosphere characterized by altered food habits, high levels of stress, and environmental variables. Lawsonia inermis (henna), Azadirachta indica (neem), Embelica officinalis (amla), Aloe barbadensis miller (aloe), Trigonella foenum - graecum (methi), Hibiscus rosa sinensis (china rose), Acacia concinna (shikakai), Sapindus mukorossi (Reetha), and Albizia amara (Arappu) are some of the natural ingredients used in the creation of this herbal shampoo. A very potent dry powder shampoo has been made possible by the blending of several of these herbal constituents.

IDEAL CHARACTERS OF SHAMPOO

- Should effectively and completely remove the dust, excessive sebum.
- Should effectively wash hair.
- Should produce a good amount of foam
- The shampoo should be easily removed by rinsing with water.
- Should leave the hair non dry, soft, lustrous with good, manageability.
- Should impart a pleasant fragrance to the hair.
- Should not make the hand rough and chapped.
- Should not have any side effects or cause irritation to skin or eye.

COMPOSITION OF SHAMPOO

- Surfactant
- Antidandruff agents
- Conditioning agents
- Pearlescent agents
- Sequestrants

- Thickening agents
- Colours, perfumes and preservatives.

TYPES OF SHAMPOO: Shampoos are of the following types:

- Powder Shampoo
- Liquid Shampoo
- Lotion Shampoo
- Cream Shampoo
- Jelly Shampoo
- Aerosol Shampoo
- Specialized Shampoo
- Conditioning Shampoo
- Anti-dandruff Shampoo
- Baby Shampoo
- Two Layer Shampoo.

People frequently find it difficult to prioritize their physical well-being in the fast-paced world of today. Hair-related problems have increased in frequency, such as split ends, dandruff, premature graying, and hair loss. Stress, scalp infections, hormone imbalances, inadequate vitamin and mineral intake, and overuse of chemical-laden shampoos are some of the causes of these issues. Our project's main objective was to address these hair issues.

METHODOLOGY

Preparation of Herbal Extract

Amla Powder

- Amlas must be cut and dried in sunlight for a couple of days.
- It will notice that the juice is evaporated and the pieces are dried up.
- Transfer these pieces into a blender and blend them completely.
- Sift them through a sieve till you achieve smooth powder.
- Then amla powder is ready.
- Store it in an airtight container for up to 6 months.

FORMULATION

Sl No.	Ingredients(mg)	Batches		
		F-1(mg)	F-2(mg)	F-3(mg)
1.	Henna powder	5.69	2.63	3.72
2.	Neem powder	4.31	5.37	3.28
3.	Amla powder	25	27	28
4.	Aloe vera powder	1.66	3.33	1.66
5.	Fenugreek powder	3.33	1.69	3.33
6.	Hibiscus powder	3.33	3.33	1.69
7.	Shikakai powder	1.66	3.33	1.66
8.	Reetha powder	3.33	1.66	3.33
9.	Arappu powder	1.69	1.66	3.33
	Total Weight	50 gm	50gm	50gm

PREPARATION OF THE HERBAL SHAMPOO POWDER

- **Collecting dried powder:** Every ingredient was gathered from the nearby market.
- **Weighing:** To ensure a uniform powder size, each of the necessary herbal ingredients for shampoo manufacturing was weighed separately and then run through sieve no. 80.
- **Mixing:** The powders were combined using increasing dilution processes in a dried and cleaned glass mortar based on their respective weights. Until a homogeneous powder combination was achieved, mixing was maintained.
- **Sieving:** In order to obtain an adequate amount of fine powder table no. 2, the finished product was run through sieve no. 80. For additional analysis, the produced Herbal Shampoo Powder was sealed in zip-lock bags.
- **Packing and labeling:** It was then appropriately labeled and packed.

EVALUATION TESTS

- **Organoleptic evaluation:** The manufactured shampoo batches were tested for appearance, color, smell, taste, and texture, among other organoleptic characteristics.
- **General powder characteristics:** Assessment of the boundaries that may affect the preparation's external features, such as flow characteristics, appearance, packaging requirements, etc., is included in the category of general powder attributes. Particle size, bulk density, angle of repose, and powder shape are the characteristics assessed in this section.
- **Particle size:** Particle size was measured using a microscopic technique. The average particle size is a metric that affects many properties like spreadability, grittiness, etc.
- **Angle of repose:** It is described as the greatest angle that can exist between the powder pile's surface and the horizontal flow.

A glass funnel was secured in place by a clamp on a ring support placed atop a glass plate. The glass plate was mounted using a micro lab jack. 10 g of the powder were

poured into the funnel while the thumb was blocking its opening. To lower the plate and keep a space of about 2 cm between the top of the powder pile and the bottom of the funnel stem, the lab jack was adjusted while the thumb was removed. Using a protractor, the point of load to the flat plane was calculated after the powder was released from the channel. A ruler was used to estimate the level and sweep.

The angle of repose (θ) can be calculated by using the formula.

$$\theta = \tan^{-1}(h/r)$$

Where, θ – Angle of repose, h – Height of the heap, r – Radius of the base

PHYSICOCHEMICAL EVALUATION

- **pH:** At 25°C room temperature, the pH of a 10% shampoo solution in distilled water was measured. With the use of universal pH indicator paper, the pH was determined.
- **Wash ability:** After applying formulations to the skin, the manual examination determined the degree of ease and thoroughness of water washing.
- **Solubility:** The ability of a substance to dissolve in a solvent is known as its solubility. After precisely weighing one gram of the powder, it is put into a beaker with 100 milliliters of water. The solubility was increased by giving this a good shake and heating it. After cooling and filtering, the residue is measured and recorded.
- **Dirt dispersion:** Ten milliliters of distilled water were placed in a big test tube and two drops of 1% shampoo powder each were added. After adding one drop of India ink, the test tube was sealed and given ten shakes. None, Light, Moderate, or Heavy were the estimated amounts of ink in the foam.
- **Moisture content determination:** Each herbal shampoo powder weighed out at 10 g was placed in a tare evaporating dish and heated to 105°C using a hot air oven. Continued drying until, after a 30-minute break, a consistent drop in weight was seen. For every sample, the moisture content was determined.
- **Foaming index:** Weighing out one gram of powder, it is then moved to a conical flask, heated, cooled, and

filtered. Next, the extract is placed in test tubes, and water is added to make up the remaining volume. After shaking the tubes for 15 seconds at two

frequencies per second, they are left to stand for another 15 minutes. The foaming index is calculated and the height of the foam is measured.

RESULTS

• General powder characteristics

Parameters	F-1	F-2	F-3
Appearance	Fine powder	Fine powder	Fine powder
Colour	Light brown colour	Olive green colour	Light brown colour
Odour	Slight	Slight	Slight
Taste	Characterstic	Characterstic	Characterstic
Texture	Smooth, free from gritty particles	Fine, free from gritty particles	Fine, free from gritty particles
Particle Size	18-23 μ m	18-25 μ m	18-25 μ m
Bulk density	0.53 g/ml	0.55 g/ml	0.58 g/ml
Tapped density	0.63 g/cc	0.65 g/cc	0.66 g/cc
Angle of repose	26.56 ^o	28.05 ^o	26.56 ^o

• Physicochemical properties

Parameters	F-1	F-2	F-3
pH	4.5	5.1	5.3
Washability	Easy and Extent with water	Easy and Extent with water	Easy and Extent with water
Solubility	Insoluble in water	Insoluble in water	Insoluble in water
Dirt Dispersion	Light	Moderate	Moderate
Moisture contentdetermination	0.4 %	0.45 %	0.48 %
Foaming Index	Good foaming	Mild foaming	Mild foaming

DISCUSSION

In the current study, three batches of herbal shampoo powder F-1, F-2, and F-3 were prepared and evaluated in an experiment. Shampoos were discovered to be safe and perfect in their qualities and properties because they were made entirely of natural substances, the effects of which have been well-documented for their effects on hair. Three distinct batches of herbal shampoo powder were created for this study, and they were assessed based on a number of factors. Various concentrations of henna, neem, amla, aloe vera, fenugreek (methi), hibiscus, shikakai, reetha, and arappu were used to produce the experimental herbal shampoo powder, or F-1, F-2, and F-3.

The several assessment criteria were run through and verified. Every parameter produced positive outcomes. The current study's findings demonstrate that adding these medications' active components to shampoo produces more stable, aesthetically pleasing products. It has been demonstrated that the pH of the shampoo has a significant role in boosting hair quality and maintaining the scalp's natural equilibrium. One of the current trends aimed at avoiding hair damage is the promotion of shampoos with a lower pH. To establish strong outcomes for usage and good results of the product, such results are estimated from a formulation.

Despite having a fantastic wetting ability, the formulations are in a dry condition, which is advantageous for storage.

CONCLUSION

- Because of their ability to strengthen and nourish hair, herbal medicines like as henna, neem, amla, aloe vera, fenugreek (methi), hibiscus, shikakai, reetha, and arappu were chosen to create two batches of herbal shampoo powder.
- Standard operating procedures were followed to make three batches of powdered herbal shampoo.
- The F-1, F-2, and F-3 batches of prepared herbal shampoo powders were evaluated physicochemically (pH, washability, solubility, dirt dispersion, moisture content determination, foaming index), as well as organoleptically (color, odor, taste, and texture of the herbal shampoo powder) and generally (appearance, flow properties, etc.).
- The fact that the many defined parameters fell inside the acceptable ranges attested to the shampoo's high caliber. Out of the three batches, two were deemed unacceptable, and F-1 was determined to be more efficient than F-2 and F-3.
- Four participants had their hair examined, and the results showed that their hair had become smooth and well-conditioned.
- To scale up the preparations and evaluate appropriately, more research is needed.

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