



EXPLORING THE EFFICACY OF HERBAL POWDER SHAMPOO FOR HAIR CARE

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RESEARCH ARTICLE

ABSTRACT

Shampoo now symbolizes not just a means of cleaning but also of shining, easing, and messing with texture and oiliness for hair. There is a huge variety of shampoos, e.g. powder shampoo, clear liquid shampoo and liquid shampoo, lotion shampoo, solid gel shampoo, medicated shampoo and liquid herbal shampoo among the rest. While discussing the criteria of stability, there we did not mention herbal shampoos. Whether their composition is vitally simple or elaborate they can be regarded as a daily use shampoo, a medical antiseptic or a remedy for dandruff. People today are more interested in the products they use to take care of their hair, like shampoos, and other hair care preparations. Shampoos are the solutions that we use for cleaning the hair before it gets dirty and greasy. Shampoos are good for cleaning dirt and surface grease from the scalp. The amount of natural or herbal shampoo is fewer than the synthetic shampoo removed, however, the synthetic shampoo can lead to problems such as hair drying and keratin loss, which can be harmful to the scalp or hair. It is now routinely that the people are conscious about the morbid effects of each constituent item utilized during the production of shampoo and cosmetics.

KEYWORDS: Herbal shampoo, Powder Shampoo, Evaluation, Material & Methods.

INTRODUCTION

Cosmeceuticals are the elements composed from both the cosmetics and medicines, which are mostly used as a combinatory product of the cosmetic and the pharmaceutical products. These topical cosmeceuticals are particularly well designed since they consist of high concentrations of actives, such as vitamin C or hyaluronic acid. They are used for a variety of purposes: to do away with wrinkles, lessen signs of aging, corneal ulcer, acne preventer, moisturizer and can be used as a DNA mutation. Although FDA doesn't accept or recognize cosmeceuticals as the products which are not expressly mentioned in the Federal Food, Drug, and Cosmetic Act, cosmeceuticals are deemed to be the special and unique kind of cosmetic product in the other countries.

Hair care products are defined as you wash off extra oil, dirt, and dandruff through your scalp and hair using these. Another type of product - for hair care - has a benefit of strengthening hair in its turn and gives to it an attractive look. In the beginning of the last century, the first cake soap gratefully revealed the new technology of hair and scalp cleaning. Then on, shampoo products rose and became the mainstream. The Indian Subcontinent is the motherland of shampoos who are ruling the global market. It derives from the Hindi word "champo," which denotes head and scalp massage by use of hair oil and is one of the ancient words known in the history of ift technology 1762. The main function of the shampoo is the hygiene purpose in its reservoir, cleaning the hair of sebum deposits, scalp debris, remnants of combing gadgets, and product residues. Besides lathering, shampoos act as the lubricant, conditioner, as well as become the carrier for medications and other

agents. Surfactant is the main part of the shampoo designing, detergents showing efficacy enhancement effect are another ingredient. Nowadays none of the shampoo products in the stores are natural. They contain a huge amount of chemicals that exhaust the skin. The negative aspects of our sustainability footprint are not well known to general consumers. Sodium lauryl sulfate, a rather frequent cereal stock, is very much damaging to the hair follicles and can likewise irritate skin at the length of use in the shampoo. As for the heavier preservatives such as formaldehyde, these too are added in the shampoo formulas which explodes the sensitivity of the skin. Now consumers are aware of the negative impacts the synthetic products come up with costing their skin, hair and eyes your health, they take the herbal route over synthetic products. We can point out that negative aspects of herbal products (one of them) are rare. All shampoos intended for treated hair are classified as medicated. Those based on herbal extracts include various forms of liquids, lotions and powders. Clear liquids as well as solid gels are among those specifically marketed for dry hair. The answer to herbal shampoo instability problem is focused on. They can be of various types such as the plain or basic and anti-dandruff for the antibacterial purpose and the brand shampoos for hair nourishment with vitamins, amino acids or proteins which are all hydrolyzed.

IDEAL PROPERTIES OF HERBAL POWDER SHAMPOO

- Adding Effectiveness in cleaning hair is the purpose of shampoo.
- Shampoo should be straightforward to ration using water that is turned on by you.
- Hair that is washed using a shampoo must not be dry, cleanable, nor shine.
- The hair shampoo, if not to cause rough hands, should be avoided.
- Shampoo should not be designed to trigger any undesirable reactions and should neither burn nor irritate the eyes of the consumer.
- Hair care items need to be able to spread and disperse easily into hairs because this is how a product would work and deliver the hair care results the user desires.
- Even so, the word shampoo plays the part to create a thick, opulent lathering foam.
- Its low level dose can probably be recommended.
- complexness of combing wet hair.
- It should not deprive your nails of natural oils and make them peel.

COMPOSITION

- Principal surfactant
- Secondary surfactant
- Anti-dandruff agent
- Conditioning agent
- Pearlescent agent
- Sequestrants
- Thickening agent
- Colours
- Perfumes
- Preservatives

REVIEW OF LITERATURE

Mr. Aqif as Sayed (December 2022) Reported microcosmos from that show “The concomitant Shikakai-based shampoo containing a vital constituent such as Shikakai extract is helpful for minimizing the hair injury and useful in the approaches of hair growth.” Then, variation of pH along with dirt dispersion, wetting time, % of solid content and surface tension of Shikakai shampoo was evaluated. With a result of laboratory evaluation of the given formulation in return, the formulation has noted to be better when compared other formulations. Therefore, the prepared shampoo with Shikakai extract not only prevented the occurrence of hair fall, but also acted safe and effective for the hair.

Nema k. Ramesh (June 2023) published the information on “A poly herbal shampoo with herbal ingredients which are used traditionally for hair cleaning”. All the natural substances including the extracts from plants that are used to develop shampoo are safer than the synthetic components. Mixture of all herbals is combined

with shikakai and reetha which act as surfactant for not only cleansing but also calming scalp. The citrus flavor, obtained from the powder, is not only a preservative but also possesses antioxidant characteristics. The manufactured herbal powder is assessed for foamability and antimicrobial activity.

Mr. Prajwal R. Bhujba (December, 2023) reported that “The physicochemical characteristics of both the homemade and the commercial shampoos will be evaluated and compared using a number of assays.” In this quality control process, prepared shampoo will be tested as the same commercially available shampoo brands, then with the need to carry out further studies and developments to improve its quality.

Priti S. Narkhedkar (2023) The formulation of this shampoo was aimed at attaining a stable and functional formula that will contain all the components that could help in its effectiveness. A minimal effect of shampoo on the environment can be achieved through incorporating organic herbal extracts into it. The safety of a hair product like a natural shampoo is higher than in the case of its counterpart, the synthetic shampoo. Rather than synthetic chemical elements, the current finding employs Shikakai, Amla, and other plant derivatives to provide the conditioning effect. The evidence is on formulators, making them influence consumer perception of what constitutes a good shampoo. Within the scope of this research, we seek to propose an herbal anti-dandruff shampoo, which contains natural ingredients, but foremost highlights its effectiveness and safety.

Mr. Akash Shyam Jhangam (2023) in his report called "World market towards ethno health care, health foods and for cosmetic purposes including hair preparations" presented a case that ethno medicines apart from health care, foods and for cosmetic purposes such as hair preparations are a plus to the world market (June 2023). Among the ingredients used in other herbal shampoos, this one still is the safest compared with the commercial marketed ones. Along with a herbal shampoo formulation, the intended users would not only be provided with cleaning power, but also a basic scalp treatment. Kalonji: stimulates scalp blood circulation and stimulates the hair growth, cinnamon: aids in warding off lice and fungus, shikakai has an antidandruff property and neem: has a bacteria and fungus resistant effect.

MATERIAL & METHODS

All the herbal formulations used in this research were sourced from local markets. The herbal shampoo powder was made using the following natural ingredients: first ingredient is listed below.

Constituents	Quantity (100g)
Reetha	10g
Shatavari	10g
Neem	10g
Tulsi	10g
Shikakai	13g
Henna	10g
Bahera	3.3g
Amla	10g
Onion powder	10g
Ginger	1g
Brahmi	10g
Harda (Myrobalan)	3.3g



Figure 1 : Formulated herbal powder shampoo

PLANT PROFILE

Sr. No.	Plants	Biological source/ Family	Uses
1.	Reetha	Dried fruits of <i>Sapindus mukorossi</i> (Sapindaceae)	Foaming agent.
2.	Shatavari	It consists of dried roots & leaves of plant <i>Asparagus racemosus</i> (Liliaceae)	Kidney stone, Blood Glucose Regulation, Smooth Menstruation.
3.	Neem	Dried leaves of <i>Azadirachta indica</i> (Miliaceae)	Antiseptic, antibacterial
4.	Tulsi	Dried leaves of <i>Ocimum santum</i> (Labiatae)	Antibacterial
5.	Shikakai	Dried seeds of <i>Acacia rugate</i> (Leguminesue)	Foam base
6.	Henna	Dried leaves of <i>Lawsonia inermis</i> (Lythraceae)	Conditioner
7.	Baheda	Dried ripe fruits <i>Terminalia balerica</i> (Combretaceae)	Provides nutrition to growing hair
8.	Amla	Dried ripe fruits of <i>Embelica officinalis</i> (Euphorbiaceae)	Hair growth promoter
9.	Onion powder	It is derived from the plant <i>Allium ascalonicum</i> (Alliaceae)	Antiallergic, Antimicrobial, Expectorant.
10.	Ginger	It obtained from <i>Zingiber officinale</i> (Zingiberaceae)	Aromatic, carminative, flavouring agent.
11.	Brahmi	Dried leaves of <i>Centlla asiatica</i> (Umbelliferae)	Support Health of Hair
12.	Harda (Myrobalan)	Dried ripe fruits of <i>Terminalia chebula</i> (Combretaceae)	Hair Growth Promotor



Figure 2 : List of Herbal powder shampoo ingredients

EVALUATION PARAMETER

Organoleptic evaluation: Sensory evaluation should be done on the parameters including colour, odour, taste, and texture. The same apply to colour and texture as they are through visual and tactile perceptions respectively. The laboratory makes use of five taste and odour sensitive individuals to perform random sampling.

General powder characteristic: General powder properties consist of the assessment of those things which determine the external properties (like flow properties, appearance, packaging etc.) of the medication. The factor group which includes powder form, particle size angle of repose, and bulk density are taken into consideration under this part. Sample for all these evaluation types are taken from three different levels i.e. from the top, middle and lower levels.

1. Particle size: Particle size is a parameter, which can influence several properties such as spreadability, grittiness, and so on. Particle size is estimated by using Isopropyl Standard sieves by mechanical shaking for ten minutes.

2. Angle of repose: In other words, this is the maximum angle at which the powder pile surface is inclined to the horizontal flow line.

Funnel method: - Fix the funnel with the right size of the dried powder inside it on a horizontal base to a height of 6 cm. Let the powder fall to get a pile through the paper lying horizontally on a plane. Note the powder's height and radius and use the formula to find the angle of repose (θ). Put measured quantity of the powdered material into a tube with a closed end as on horizontal surface. Next form a pile sifting through the funnel. Make a note of the height and radius of the heap. By that way, we can determine the angle of repose by means of the following equation.

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

Where,

θ – Angle of repose,

h – height of the heap,

r – Radius of the base

3. Bulk density: Bulk density is the ratio between the powder mass maintained at its bulk volume condition. Take the necessary amount of dried powder and add it into the 50 ml measuring cylinder filling it up to 50 ml line. Next, place a cylinder of hardwood on a hardwood surface and drop it from a height of 1 inch at a 2-second interval. Measure the volume of the powder in the container. Then weigh the powder. This is done many times and finally average values are received. The bulk density is worked out by the below-displayed formula.

Bulk density = mass of the polyherbal powder shampoo /Volume of the polyherbal powder shampoo

4. Tapped density: The Tapped Density is calculated using the following formula of Bulk density after taping (tapped bulk density), a plastic container filled with powder, and carrying the container several times to measure the average density value at the upper and lower extremities. Observe the initial volume or powder mass, mechanically tap the measuring cylinder or vessel for one min and take volume or mass readings until you almost being done. It was derived in gram per cubic centimeter (g/cm³).

Tapped density= Weight of powder /Tapped volume of powder

Physicochemical evaluation

1. **pH:** - Measure the pH of 10% shampoo solution prepared in the distilled water at room temperature 25 0C. The acidity or alkalinity of the solution is measured by a digital pH meter.
2. **Washability:** Apply it on the skin and see how easily it can be washed off when washed with water manually.
3. **Solubility:** - Solubility is a characteristic of a substance that describes its solubility in a given solvent. Weigh the 1 g powder precisely, and then transfer it into a beaker of 100 mL water. Shake thoroughly and warm to achieve a high level of dissolution. After that is the cooling and filtering steps, and what remains is what we call the residue.
4. **Loss of drying:** - Liquid loss or loss of m/m mass is defined as the loss of mass expressed in percent m/m. Balance a scale at 2 grams then transfer the powder in the dry Petri dish. Seal the Petri dish in the desiccator with calcium chloride crystals and then leave it there for 2 days. Weigh the powder carefully and measure your weight lose during drying process this way.
5. **Skin /eye irritation test:** The skin and eye irritation test result indicate that there is no harm in using the herbal shampoo powder as the shampoo does not cause irritation to the skin and eyes. This can be attributed to the lack of artificial surfactants being present in the soil. Majority of the synthetic surfactant is responsible for causing lid margin disease (inflammation) and epithelial cell injury (corneal damage). However, all of the ingredients used in herbal shampoo powder production come from a natural source. Therefore, it has no side effect at all on the skin and the eyes.

RESULT & DISCUSSION**A) Organoleptic Evaluation**

Sr. No.	Test	Result
1	Colour	Light green
2	Odour	Characteristics
3	Taste	Slightly pleasant
4	Texture	Fine & Smooth

B) General powder characteristic:

Sr. No.	Test	Result
1.	Particle size	23-25nm
2.	Angle of repose	42.33⁰
3.	Bulk density	0.374 g/cm³
4.	Tapped density	0.534 g/cm³
5.	Foaming	Good foaming

C) Physiochemical Evaluation

Sr. No.	Test	Result
1.	pH	5.65
2.	Solubility	Soluble in water
3.	Washability	Easily washable
4.	Skin/Eye irritation	No harmful effect on skin & eye

DISCUSSION

The herbal powder shampoo was prepared by using herbal ingredients such as reetha, shatavari, neem, tulsi, shikakai, henna, baheda, amla, onion powder, ginger, brahmi, harda (myrobalan). All the herbal ingredients were prepared by using mixing in ascending order one by one weigh and with the help of continuous trituration. The evaluation parameters for herbal powder shampoo gives satisfactory result. In table A (organoleptic evaluation) shows the colour, odour, taste & texture of the formulated herbal powder shampoo. The result shows a light green colour (table A). The Table B (general powder characteristics) of formulated or prepared herbal powder shampoo was done and it gives satisfactorily result. In table C (physiochemical evaluation) shows pH, solubility, washability, & skin/eye irritation test of prepared herbal powder shampoo and the pH was found to be in between the ratio of 5-6.

CONCLUSION

Analysis on the composition of medicinal plants used in the preparation of herbal shampoo proved as a rich source of new drugs. The following plants have been reported for hair growth and conditioning reetha, shatavari, neem, tulsi, shikakai, henna, baheda, amla, onion powder, ginger, brahmi, harda (myrobalan). All the parameters in quality control check method were examined. All parameter provides positive result. The result obtained on present study demonstrates that the active ingredients of these drugs when incorporated in shampoo produce more stable products with desirable physical appearance. The pH value of the shampoo is crucial for the improvement and development of the characteristics of hair, reduced irritation on the eyes and for the stability of the ecosystem on the surface of the scalp. One of the ways of minimizing the damages to the hair is the current trend to promote shampoos of lower pH for promoting the hairs. Such results are estimated out of a formulation to achieve strong results for the use and good results of the product. Though the product is in dry form inspite has wonderful wetting capacity and being dry is very good for the storage. Organoleptic evaluation, General powder Characters, Physicochemical Evaluation were done and found to be within standard limits.

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