

Evaluation and Formulation of Herbal Powder Shampoo

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Abstract: Preparations of herbal shampoo powder were formulated using some common traditional drugs used by folk and traditional people of Bundelkhand region (MP) India, for hair care. The preparations were formulated using bahera, amla, neem tulsi, shikakai henna & Brahmi evaluated for organoleptic, powder characteristics, foam test and physical evaluation. As the selected drugs have been used for a long time single drug or in combination, present investigations will further help to establish a standard formulation and evaluation parameters, which will certainly help in the standardization for quality and purity of such types of herbal powder shampoos.

Keywords: Herbal Shampoo, Evaluation, organoleptic formulations of herbal powder shampoo, Evaluation methods.

I. INTRODUCTION

Cosmetology is defined as the science of alteration in appearance in India, the use of herbals for the purpose of beautification finds its occurrence in traditional literature. Ayurveda Herbal cosmetics is one of the most potent and effective areas of cosmetic technology. It is used for beautifying and overall enhancing the human personality. Herbal products are characterized by a better tolerability compared with other synthetic products. Herbal products gain popularity worldwide because there is a lack of side effects as compared with synthetic pharmaceuticals. The presence of a variety of phytochemicals and botanicals in the herbal products have dual importance, one is that they are used as cosmetics to care the body and another is the phytochemical improves the biological functions of the human body naturally results in healthy skin and healthy hair. In the formulation of herbal cosmetics plants are used in three ways either it is a total extract or a single molecule obtained through the purification of extracts (e.g. aloe Vera gel, teas, plant extracts) selective extract like wheat germ or single natural molecule like vitamins, coenzyme Q10. As the name suggests the herbal extracts mean the extracts of herbs.

Herbal medicines are the principal form of medicines. In India around 1000 manufacturers for herbal medicines are available. According to WHO around the world uses herbal medicines. Hairs are the integral part of human beauty. People are using herbs for cleaning, beautifying and managing hair since the ancient era. As the time has passed synthetic agents have taken a large share but today people are getting aware of their harmful effects on hairs, skin and eyes. This study aimed at reviewing the importance of herbal hair shampoo for the treatment of common hair problems as baldness, alopecia, hair fall, gray hair, dryness, and most common dandruff.

Herbal shampoo: A Shampoo may be described as a cosmetic preparation meant for the washing of hair and scalp, packed in a form convenient for use. Its primary function is of cleaning the hair of accumulated sebum, scalp debris and residues of hair-grooming preparations. The added functions of shampoo include lubrication, conditioning, bodybuilding, prevention of static charge.

Synthetic shampoo: People often complain about various brands of shampoo that have caused skin irritation, hair loss and severe hair damage. Number of commercially available shampoos are loaded with chemicals that are hazardous to skin and health. Most people are unaware of the side effects associated with these harmful synthetic. Common to most synthetic ingredients based shampoo is an ingredient called surfactant, which has the ability to reduce surface tension of water. The result is that, as the hair is rinsed the sebum is washed away.

Benefits of herbal cosmetic over the synthetic cosmetics: Herbal cosmetics are popular nowadays and are preferred over chemical as these products provide nutrients to the body, enhance health and are free from synthetic chemicals and here

she effect as compared to synthetic cosmetics. Some of the advantages of using natural cosmetics which make then a better choice over the synthetic ones are as follows

- Safe to use
- Compatible with body
- Natural in nature 4)Affordable and non-expensive
- Variety of products
- No side effects
- Not tested on animals

Need of Shampoo: The skin as our heads produces a greasy fluid called sebum. It is produced to protect the hair by ending itself all over the head. This gives the hair.

The ideal characteristic of herbal shampoo:

A heathy shine hat when in large amounts it makes the hair kook dirty. Should effectively and completely remove the dust, and 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, and lustrous with good manageability
- Should import a pleasant fragrance to the hair
- Should not make the hand rough and chapped

Types of Shampoo

1. Powder Shampoo
2. Liquid Shampoo
3. Lotion Shampoo
4. Cream Shampoo
5. Jelly Shampoo
6. Aerosol Shampoo
7. Specialized Shampoo
8. Conditioning Shampoo
9. Anti-dandruff Shampoo
10. Baby shampoo



Fig no1: herbal powder shampoo

Benefit of herbal powder shampoo

1. Herbal shampoos are prepared from natural ingredients and are meant for cleansing hair and scalp just like regular shampoo.
2. These shampoos are free from side effects since no surfactants are involved, has good stability and are less harmful compared to synthetic shampoo
3. Synthetic shampoo contains surfactants. Long term use of these surfactants can lead to serious effects like scalp imitation, loss of hair, drying of hair, greying of hair, split ends and eye irritation. Due to these reasons the public is getting attracted towards herbal cosmetics due to its insignificant side effects and inexpensive name

DEFINITION

A shampoo is a preparation of a surfactant (i.e. Surface active material) in a suitable form-liquid, solid or powder - which when used under the specified conditions will remove surface grease, dirt, and skin debris from the hair shaft and scalp without adversely affecting the user.

IDEAL PROPERTIES OF A SHAMPOO:

1. It should effectively and completely remove dust or soil, excessive sebum or other fatty substances and loose corneal cells from the hair.
2. It should produce a good amount of foam to satisfy the psychological requirements of the user.
3. It should be easily removed on rinsing with water.
4. It should impart a pleasant fragrance to the hair.
5. It should not cause any side-effects / irritation to skin or eye.
6. It should not make the hand rough and chapped.
7. To make the hair smooth and shiny.
8. Produce good amount of foam.
9. Should not cause irritant to scalp, skin and eye.
10. Should completely, effectively remove dirt

CLASSIFICATIONS OF SHAMPOO**Based on Appearance**

- Powder shampoo
- Liquid shampoo
- Gel shampoo
- Oil shampoo

Based on use or Function

- Conditioning shampoo
- Antidandruff shampoo
- Baby shampoo
- Clarifying shampoo

Based on Origin

- Herbal Shampoo: Egg shampoo evaluation of shampoo comprises the quality control test including visual assessment and physiochemical control such as pH, density and viscosity.
- Ideal Properties of Shampoo
- To make the hair smooth and shiny.
- Produce good amount of foam.
- Should not cause irritant to scalp, skin and eye.

- Should completely, effectively remove dirt.
- Impart pleasant fragrance to hair.

Functions of Shampoo

- It should effectively and completely remove dirt or soil.
- It should effectively wash the hair.
- It should produce a good amount of foam to satisfy the user.
- It should be readily removed by rinsing with water.
- It should impart a pleasant fragrance to the hair

II. AIM & OBJECTIVE OF SHAMPOO

Aim:

Formulation and evaluation of Herbal powder shampoo

Objectives:

- To minimize side effects.
- To improve hair shine.
- To evaluate for various parameters
- To formulate herbal powder shampoo for improvement of appearance and cleaning of hair

III. PLAN OF WORK

- Introduction
- Literature Survey.
- Materials & Methods of Preparation,
- Methods of Evaluation.
- Summary and Conclusion.
- Result & Discussion

V. LITRATURE SURVEY

Satin Dabey, Neelesh Nemaat, al. (2004)

the preparations of herbal shampoo were femulated using herbal, am hakal henna & brahmni evaluated for organoleptis, powder characteristics, fomen physical avaluation

Satyanarayana, D. Nirmala kumari, Ch. Sai et. al.(2021):

The formulation of shampoo must be safe and efficient for long use. The major objective of the present study was to formulate the herbal shampoo powder by uning ingredients like boscoss, Bhringraj, Curry leaves, Neem, Tulasi, shikakai, amla, and Rita in an appropriate

Jennifer Gubitosa 1, Vito Rizzi,et. al.(2019):

The information of hair wnatomy and physiology, hair care cosmetics: solid clay shampoo: thassoul clay herbal shampoos.

Khaload Al Hadi, Shah A. Khun,ct. al. (2014):

The study aimed to formulate a pure herbal shampoo and to evaluate and compare its physionchemical properties with the marketed synthetic and herbal shampoos.

Wani Snehall, Khot NitinZand Buchake Vaibhav.et. al., (2014):

The preparation and Evaluation of antidandruff polyherbal powder shampoo in case of hair disorders like dandruff problem,proper selection of ayurvedic ingredients.

Sachin Dubey, Neelesh Nema and S. Nayakat. al. (2019)

tan pauptations of horoul shampon powder were fermitated wings nal drugs used by folk and traditional people of Basaelkhand region (MP) balia, fir

Jennifer Gabitusa, Vito Hirai, Funda Fini 1 and Pimabsa Cosina 12,et al. (2015)

The importance of the herbal powder shampoo is more than the other shampoo. This review is largely focused on the description of solid shampoos mainly humed on the use of sys herbo or fours us washing bases alternative to the traditional ones consisting of a combination of synthetic surfers, segether with other usual ingrediens cexpectelin a shampoo formulation

Sajid A. Mulanil, Nitin Mali², Firoj A. Iamboli. Vogush S KokkartAmogha S Ajagekarl, Shubham J Kamble⁴, Srushti S Dianali, Anilkumar J Shinde, et. al. (2021)

The physicochemical evaluation of the formulated shampoo showed kleal results. However, to improve its quality, product performance, and safety, father development and sady wash required

VI. INTRODUCTION TO HERBAL INGREDIENTS

Shikakai Powder

Synonym: Shitala

Biological Source: It consist of fruits of the plant *Acacia Conca* Linn.

Family: Leguyminosae

Chemical Constituents: It contains Lupeol, spinasterol, acacic acid, lactone and the natural sugars glucose, arabinose and rhamnose

Uses: It is used surfactant and it also has an Antiorident property



Neem

Synonyms: *Azadirachta indica*

Biological Sources: Its fruits and seeds are the source of neem

Family: Meliaceae

Chemical constituents: It contains glycerides, diverse polyphenols, nimbolide, triterpenes, and beta-sitosterol.

Uses: Antiseptic. Antibacterial



Aloe Vera

Synonyms: Aloe barbadensis Mill

Biological Source: Dried leaves of Aloe barbadensis miller

Family: Asphodelaceae

Uses: Condition and moisturizing effect. Fenugreek Seeds:



Hibiscus:

Synonym. Hibiscus roseae

Biological Source: The flower of plant of hibiscus. Family: Malvaceae

Use: It acts as a natural ultra-emollient that traps moisture in your hair and prevents your hair from becoming dry and frizzy Revives damaged hair and induces hair growth.



Amala

Synonyms: Phyllanthus emblica

Biological source: dried, as well as fresh fruit's pericarp of the plant Emblica officinal is Gaerth Phyllanthus emblica Linn

Family: Phyllanthaceae

Uses: hair growth promotor May reduce hair loss and shedding.



II. MATERIALS AND METHODS

Table 1: List of materials

Sr. no	Common name	Role
1	Harda	Hair growth promotor
2	Behera	Providing nutrition to hair
3	Amla	Hair growth promotor
4	Neem	Antibacterial ,antiseptic
5	Tulsi	Antibacterial
6	Shikakai	Foam base
7	Hibiscus	conditioning
8	Bramhi	Support health of hair
9	Aloevera powder	Moisturizer,conditioning
10	bhringraj	Hair tonic

Material

Harda Behern, Amla, Neem, Tulsi Shikakai, Hibiscus, Branthi, Aloe vera powder, Mhtingrajave de variasas materials used in a current investigation. Following method was adopted during the axeso of present investigation

Table 2: source and categories of lipstic ingredients

Sr. no	ingredients	source	category
1	Harda	Powder extract	Hair growth promotor
2	Behera	Powder extract	Providing nutrition to hair
3	Amla	Powder extract	Hair growth promotor
4	Neem	Powder extract	Antibacterial ,anticeptic
5	Tulsi	Powder extract	Antibacterial
6	Shikakai	Powder extract	Foam base
7	Hibiscus	Anand mahendra sinner	conditioning
8	Bramhi	Powder extract	Support health of hair
9	Aloevera powder	Anand mahendra sinner	Moisturizer, conditioning
10	bhringraj	Powder extract	Hair tonic

Procurement of Material:

The different parts of the plants were selected for the study having hair care property. The plants are methi powder, Hibiscus Leaf (Hibiscus rosea), Neem leaf (Azadirachta indica), Silakal fralt (Acacia concinna). Aloe leaf

(Aloe barbadensis), Henna Leaf (Lawsonia inermis), bramhi root (centella asiatica), Rithafruit (sapindus mukorossi), amla fruit (Embeliva officinalis) Nagarethe (Cyponis rotasis) Raiman and Tials 9-12 The preder of methi, Amis fruit, Hibiscus Leaf, Noam leaf, Shikakai frait, Aloe lost, Hanne Lal, Rita Buit were collected from the local market. The raw materials collected were givan with their arsperspective biological scurve and uses in table no. I ingredients in the hair care, even they are responible to provide the nutrition to the body

Herbs have long been associated with hair care and are often ingredients of conditioners, sharpoos and rinsex. The selection of active ingradients for hair care powder is often based on the ability of the ingredient to prevent casage to the skin as well as to improve the quality of the skin by way of cleaming. nesnishing and protecting the skin. In the paper, we repeated the developmem and evaluation of herbal hair care powder

Preparation of the Herbal Shampoo Powder:

Drying

All powder is in dry form and grinded.

Weighing:

All the required herbal powders for shampoo preposition were weighed individually.

Size redaction:

The crude ingredients were collected and theca ingredients were size reduced Ming hand driver mixer individually.

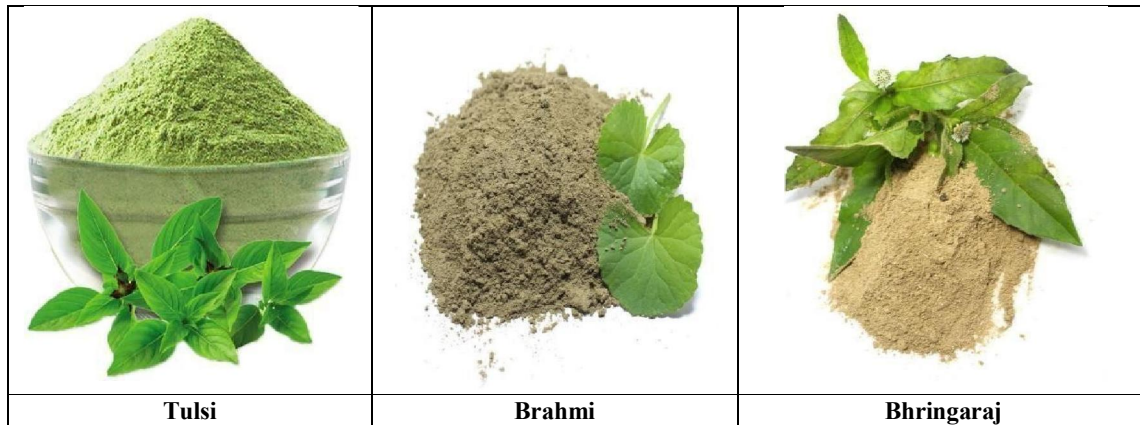
Mixing:

All these fine ingredients were mixed thoroughly by mixer to form a homogenous five powder.

Sieving:

Then this fine powder was passed through sieve no:120,to get the sufficient quantity of fine powder





Preparation of different formulation

Table 3: preparation of formulation

Sr. no	Common name	Quantity
1	Harda	5.30gm
2	Behera	3.65gm
3	Amla	4.20gm
4	Neem	3.70gm
5	Tulsi	0.55gm
6	Shikakai	8.16gm
7	Hibiscus	0.2gm
8	Bramhi	6.12gm
9	Aloevera powder	0.4gm
10	Bhringaraj	11gm

Formulation:

This formation is prepping as per the optimized formula given in table no.3 wing the funeral mrhood of preparation subjected for the evahastion tests



Fig 7: formulation of herbal powder shampoo

Prepared formations of shampoos were subjected to following evaluation parameters.

Organoleptic evaluation:

Organoleptic evaluation on the parameters like colour, odour, taste and texture was carried out. Colour and odour were evaluated by vision and touch sensation respectively. For taste and odour evolution, tests of live taste and odour sensitive persons were performed and random sampling was followed.

General powder characteristic:

General powder characteristics include evaluation of those parameters which are going to affect the external properties (like flow properties, appearance, packaging criteria etc.) of the preparation. Characteristics evaluated under this section are powder form, particle size, angle of repose and bulk density. Samples for all these evaluations were taken at three different levels i.e. from top, middle and lower level.

Particle sizes

Particle size is a parameter, which could affect various properties like spreadability, grittiness etc. Particle size was determined by the sieve method by using LP. Standard sieves by mechanical shaking for 10 Min.

Angle of repose:

It is defined as the maximum angle possible in between the surface of pile of powder to the horizontal flow. Funnels method: Required quantity of dried powder is taken in a funnel placed at a height of 6 cm from a horizontal base. The powder was allowed to flow to form a heap over the paper on the horizontal plane. The height and radius of the powder was noted and recorded. The angle of repose (θ) can be calculated by using the formula. Required amount of dried powder is placed in a cylindrical tube open at both ends is placed on a horizontal surface. Then the funnel should be raised to form a heap. The height and radius of the heap is noted and recorded. For the above two methods, the angle of repose (θ) can be calculated by using the formula

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

Where

$$\theta = \text{Angle of repose, } h = \text{height of the heap, } r = \text{Radius}$$

Bulk density.

Bulk density is the ratio between the given mass of a powder and its bulk volume. Required amount of powder is dried and led in a 50 ml measuring cylinder up to 50 ml mark. Then the cylinder is dropped hard on wood surface from a height of 1 inch at 2 second interval. The volume of the powder is measured. Then powder is weighed. This is repeated to get average values. The bulk density is calculated by using the below given formula

Tapped density.

The tapped density is an increased bulk density attained after mechanical tapping a container containing the powder sample. After observing the initial powder volume or mass, the measuring cylinder or vessel is mechanically tapped for 1 min and volume or mass readings are taken until little further volume or mass change was observed. It was expressed in gram per cubic centimeter (g/cm^3)

Physicochemical evaluation

pH: pH affects the pharmaceutical consideration as well as it affects the effect of shampoo on hairs. pH of powder shampoo was taken and 9 ml of distilled water was added to it. pH of the resulting solution was calculated using pH meter at 37°C

Washability: Formulations were applied on the skin and then ease and extent of washing with water were checked manually.

Solubility: Solubility is defined as the ability of the substance to be soluble in a solvent. One gram of the powder is weighed accurately and transferred into a beaker containing 100ml of water. This was shaken well and warmed to increase the solubility. Then cooled and filtered it, the residue obtained is weighed and noted.

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 produced 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.

Ash value: Total ash content Ash value is calculated to determine the inorganic contents which is characteristic for an herb. About 2gm of powder drug was taken in silicon dish previously ignited and weighed. Temperature was increased by gradually increasing the heat not exceeding to red color. After complete burning, ash is cooled and weighed. Acid insoluble ash Acid insoluble ash was calculated by boiling above obtained ash with 25 ml dil. HCl for 5

Table 4: General Powder Characteristics:

Sr.no	Test	Result
1	Particle size	20-23nm
2	Angle of repose	45*6''
3	Bulk density	0.370(g/cm ³)
4	Tapped density	0.526(g/cm ³)

Table 5: Physicochemical evaluation:

Sr. no	Test	Result
1	pH	5
2	WASHABILITY	Easily washable
3	Solubility	Insoluble in water
4	Skin irritation	No harmful
5	Ash value	0.21%w/w
6	Stability study	Stable
7	Moisture content	1.82%w/w
8	Nature of hair after wash	Soft manageable
9	% of foaming capacity	151.5

III. RESULT AND DISCUSSION

Herbal powder shampoo was prepared using, Brahmi, Bhringraj, Shikakai, Aloe vera Powder, Tulsi, Neem, Hibiscus Flower and in different composition. These formulations were prepared using mixing in ascending order by weight and with continuous trituration. This preparation was evaluated organoleptically observing color, odor, taste and texture. Results shows a faint brown color (Table 6). General powder characteristics of formulation was done. The ash values in (0.21% w/w) was calculated. The Moisture content was found to be 1.82% w/w. The pH was found to be 5 (table 5).

Table 6: organoleptic evaluation/visual appearance:

Sr.no	Test	Observation
1	Color	Faint brown
2	odor	Characteristics
3	Texture	Fine and smooth
4	test	slight

IV. SUMMARY AND CONCLUSION.

Medicinal plants used in the formulation of herbal shampoo were found as rich source of novel drugs. These plants are, Bahera, Brahmi, Bhringraj, Shikakai, Aloe vera Powder, Tulsi, Neem and Hibiscus Flower has been reported for hair growth and conditioning. The various quality control parameters were checked. All parameter gives favorable result. The results obtained on present study shows that the active ingredients of these drugs when incorporated in shampoo gives more stable products with good aesthetic appeal. The pH of the shampoo has been shown to be important for improving and enhancing the qualities of hair, minimizing the irritation to the eyes and stabilizing the ecological balance of the scalp. The current trend to promote shampoos of lower pH is one of the minimizing damages to the hair. Such Results are estimated out of a formulation to establish strong results for the usage and good results of the product. Though the

product is in dry form in spite has wonderful wetting capacity and being dry is very good for the storage. The evaluation parameters like Organoleptic evaluation, General powder Characters, Physicochemical Evaluation, cleaning action, foaming, wetting agent, Nature of hair after wash was carried out and was found to be within the standard range

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