

## Formulation and Evaluation of Herbal Shampoo

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**ABSTRACT:** A liquid or cream preparation of soap or detergent to wash the hair is called as shampoo. Shampoos are the products which removes surface grease, dust from the hair shaft and scalp. Shampooing is the most common form of hair treatment. Shampoos are primarily being products aimed at cleansing the hair and scalp. In the present scenario, it seems improbable that herbal shampoo, although better in performance and safer than the synthetic ones, will be popular with the consumers. A more radical approach in popularizing herbal shampoo would be to change the consumer expectations from a shampoo, with emphasis on safety and efficacy. The main objective of this study was to eliminate harmful synthetic ingredient from herbal shampoo formulation and substitute them with a safe natural ingredient.

The objective of this study is to formulate and evaluate herbal shampoo for cosmetic purpose from herbal ingredients. Hibiscus powder, Neem powder, Henna powder, Amla powder, Shikakai powder, Ritha powder, Alo-vera gel was procured from local market in powdered form also gel form Banyan root powder and Soya milk is prepared by homemade method, then prepared decoction of these ingredients and mixing with each other and evaluated for its organoleptic and Physico-chemical characteristics. Herbal shampoo is used to cleansing of the hair also conditioning, smoothing, of the hair surface, good health of hair, hair free of dandruff, dirt grease and lice above all, it's safety benefits are expected. The advantage of herbal cosmetics is their non-toxic nature, reduce the allergic reactions and time tested usefulness of many ingredients. Thus in present work, we found good properties for the herbal shampoo and further optimization study benefits of herbal shampoo on human use as cosmetic product.

**KEYWORDS:** Herbal drug, herbal extract, Formulation, Evaluation, herbal shampoo.

### I. INTRODUCTION

"Shampoo is the cleansing preparation of the hair and scalp." A liquid or cream preparation

of soap or detergent to wash the hair is called as shampoo. Shampoo is a hair care product, typically in the form of a viscous liquid that is used for cleansing hair. The goal of using shampoo is to remove the unwanted build-up in between the hair without stripping out so much sebum as to make hair unmanageable Shampooing is the most common form of hair treatment. Shampoos are primarily being products aimed at cleansing the hair and scalp. In the present scenario, it seems improbable that herbal shampoo, although better in performance and safer than the synthetic ones, will be popular with the consumers.

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. These regions attracted to community towards the herbal products, which are less expensive and have negligible side effects. Hair cleansers or shampoos are used not only for cleansing purpose but also for imparting gloss to hair and to maintain their manageability and oiliness for hairs <sup>[1]</sup>. Shampooing is the most common form of hair treatment. Shampoos have primarily been products aimed at cleansing the hair and scalp. Selected ingredients of shampoo that have been popular with the consumer are currently under attack because of potential risks associated with their use <sup>[2]</sup>.

Formulating cosmetics using completely natural raw materials is a difficult task. The challenge lies in selecting materials that can be rationally justified as 'natural' and formulating them into cosmetics whose functionality is comparable with their synthetic counterparts. 3 Selecting the

evaluation parameters of a shampoo is a challenging task, simply because of the multitude of both subjective and instrumental test methodologies available for this purpose.4 A more radical approach in popularizing herbal shampoo would be to change the consumer expectations

from a shampoo, with emphasis on safety and efficacy.

Though there are different types of skin cleansers, but the hair cleansing preparations can be grouped into only one category and are called as shampoo. They are basically water based products containing mainly surfactants. Its 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.

#### Objectives

- 1) To formulate the herbal shampoo.
- 2) To evaluate the herbal shampoo.
- 3) The part used for formulation is leaves, fruits and root.
- 4) To reduce side effects of chemical formulation.
- 5) To improve hairs texture.
- 6) To darkening the hair color.
- 7) To imparting gloss to hair and to maintain their manageability and oiliness for hairs.

#### Importance of this formulation:

1. The selection of active ingredients for hair care shampoo is often based on the ability of the ingredient to prevent damage to skin as well as to improve the quality of the skin by way of cleansing, nourishing, and protecting the skin.
2. It have not make the hand rough and chapped.
3. It's not give any side effects or causes irritation to the eye.
4. It produces a good amount of foam to satisfy the psychological requirements.

#### Ideal Properties of shampoo:

1. To make the hair smooth and shiny.
2. Produce good amount of foam.
3. Should not cause irritant to scalp, skin and eye.
4. Should completely, effectively remove dirt.
5. Impart pleasant fragrance to hair.

#### Functions of Shampoo

1. It should effectively and completely remove dirt or soil.
2. It should effectively wash the hair.
3. It should produce a good amount of foam to satisfy the user.
4. It should be readily removed by rinsing with water.
5. It should impart a pleasant fragrance to the hair.
6. It should not have any side effects or causes irritation to the skin and eye

#### Classification of Shampoo




1. Based on Appearance.
  - Powder shampoo
  - Liquid shampoo or lotion shampoo
  - Gel shampoo or Solid shampoo
  - Cream shampoo
  - Oil shampoo
  - Miscellaneous anti dandruff shampoo or medicated shampoo
2. Based on Use or Function.
  - Conditioning shampoo
  - Antidandruff shampoo
  - Therapeutic shampoo
  - Baby shampoo
  - Balancing shampoo
  
  - Clarifying shampoo
3. Based on origin:
  - Herbal shampoo
  - Egg shampoo





Evaluation of shampoos comprises the quality control tests including visual assessment and physiochemical controls such as pH, density and viscosity.

## II. MATERIALS AND METHODS:

#### Raw herbs collection

**Materials:** All crude drugs were collected from Ayurveda store, SMBT Institute of D.Pharmacy medicinal garden and SMBT Campus, Dhamangaon, Nashik.

Sr. No.	Herbal Extract	Medicinal Importance and Uses	Picture
1	Hibiscus leaf (Dried leaves of Hibiscus rosea - Family Malvaceae)	Prevent hair loss and promote hair growth	
2	Heena leaf (Dried leaves of Lawsonia inermis - Family Lythraceae)	Growth of hair and conditioner	
3	Amla fruit (Dried ripe fruit of Embelica officinalis - Family Euphorbiaceae)	Darkening of hairs and hair growth promoter	

4	Neem leaf (Azadirachta indica) family -Meliaceae	Prevent the dryness of hairs and flaking of hairs	
5	Shikakai fruits Dried pods of acacia concinna family - Mimosaceae	Foam base and anti dandruff.	
6	Ritha fruit Dried fruits of Sapindus mukorossi Family - Sapindaceae	Detergent and antidandruff.	
7	Aloevera leaf Dried leaves of Aloe barbadensis miller Family - Liliaceae	Conditioner and moisturizing effects.	





8	Banyan root Dried roots of Ficus aurea Family - Moraceae	Lustrous effects on hairs	
9	Soyamilk Dried legumes of Glycine max Family - Fabaceae	Gives proteins and edible oils.	
10	Guar gums Powder of the endosperms of seed of Cyamopsis tetragonoloba Family - Leguminosae	Good emulsifier and used in food and cosmetics industries.	
11	Almonds Dried ripe seeds of Prunus amygdalus Family - Rosaceae	Preservatives, Sedatives and Demulcemics	

Table 1: Herbal Drugs and their Information

**Preparation:**

Sr. No.	Constituents	Part of plant used	Quantity (100 ml )
1.	Hibiscus powder	Leaves	5 gm
2.	Neem powder	Leaves	5 gm
3.	Henna powder	Leaves	5 gm
4.	Amla powder	Fruits	10 gm
5.	Shikakai powder	Fruits	15 gm
6.	Ritha powder	Fruits	15 gm
7.	Aloe Vera gel	Leaves	10 ml
8.	Banyan powder	Roots	5 gm
9.	Soya milk	Seeds	20 gm
10.	Gaur gum	Seeds	1 gm
11.	Sandalwood	Wood	4.5 gm
12.	Almond	Fruits	4.5 gm

**Table 2: Formula of herbal shampoo**

**Preparation method of herbal shampoo:**

**Decoction Method:** Weighed all the ingredients according to the formula. Decoction of Hibiscus, Henna, Neem, Amla, Banyan root powders, Aloe vera gel, and Soya milk was prepared in one part of water. Filter it, by using muslin cloth. Collect filtrate. Decoction of Shikakai, and Ritha was prepared in another part of water. Filter it by using muslin cloth. Collect filtrate. Mixed to each other of above filtrate with constant stirring. Mixed gaur gum as a thickening agent for maintenance of consistency of herbal shampoo as like semisolid nature. Preservatives and perfume was added lastly [3].

**Evaluation of Prepared Herbal Liquid Shampoo**

To evaluate the prepared formulations, quality control tests including visual assessment and physicochemical controls such as pH, density and viscosity were performed. Also, to assure the quality of products, specific tests for shampoo formulations including the determination of dry residue and moisture content, total surfactant activity, salt content, surface tension, thermal and mechanical stability and detergency tests were carried out [4,5].

**1) Physical appearance/visual inspection:** The formulations prepared were evaluated in terms of their clarity, foam producing ability and fluidity.

**2) Determination of pH:** mixed 01gm of shampoo with 09ml of water and determine the pH using pH meter at 27°C.

**3) Determine percent of solids contents:** A clean dry evaporating dish was weighed and added 4 grams of shampoo to the evaporating dish. The dish and shampoo was weighed. The exact weight of the

shampoo was calculated only and put the evaporating dish with shampoo was placed on the hot plate until the liquid portion was evaporated. The weight of the shampoo only (solids) after drying was calculated.

**4) Rheological or Viscosity evaluations:** The viscosity of the shampoos was determined by using Brookfield viscometer. 10ml of shampoo is taken in a beaker and spindle is dipped in it for about 5min. and then reading is taken.

**5) Dirt dispersion:** Two drops of shampoo were added in a large test tube contain 10 ml of distilled water. 1 drop of India ink was added; the test tube was stoppered and shakes it ten times. The amount of ink in the foam was estimated as None, Light, Moderate, or Heavy

**6) Skin sensitization test** This test is performed on skin of human volunteers and checks whether it irritation on skin or not.

**7) Stability test** Stability and acceptability of organoleptic properties (odour and color) of formulations during the storage period of 2 months indicated that they are chemically and physically stable.

**8) Cleaning action:** 5 grams of wool yarn were placed in grease, after that it was placed in 200 ml. of water containing 1 gram of shampoo in a flask. Temperature of water was maintained at 35°C. The flask was shake for 4 minutes at the rate of 50 times a minute. The solution was removed and sample was taken out, dried and weighed. The amount of grease removed was calculated by using the following equation:  $DP = 100(1 - T/C)$  In which, DP is the percentage of detergency power, C is the weight of sebum in the control sample and T is the weight of sebum in the test sample.

9) **Foaming ability and foam stability** Cylinder shake method was used for determining foaming ability. 50 ml of the 1% shampoo solution was put into a 250 ml graduated cylinder and covered the cylinder with hand and shaken for 10 times were recorded. The total volumes of the foam contents

after 1 minute shaking. The foam volume was calculated only. Immediately after shaking the volume of foam at 1 minute intervals for 4 minutes were recorded.

10) **Nature of hair after washes** Nature of hair after wash can be done by collecting the responses of volunteers.

Sr.No.	Evaluation Parameter	Observation
1	Physical appearance/visual inspection	Dark brown, good foaming
2	pH.	5.2
3	Percent of solids contents	3.5
4	Rheological evaluations	1.78 cps
5	Dirt dispersion	Light
6	Skin sensitization	No irritation on skin
7	Stability test	Stable after two months
8	Cleaning action	30.16 %
9	Foaming ability and Foaming stability	50 ml
10	Nature of hair after washes	Soft manageable

**Table 3: Evaluation Parameter.**

### III. SUMMARY AND CONCLUSION

The herbal shampoo preparation was formulated based upon traditional knowledge and emphasis was to formulate a stable and functionally effective. The formulated shampoos were not only safer than the chemical conditioning agents, but also greatly reduce the hair loss during combing as well as strengthen the hair growth. The pH of the shampoos was adjusted to 5.2, to retain the acidic mantle of scalp.

The physicochemical approach used for preservation of the formulations to avoid the risk posed by chemical preservatives. However, the aesthetic attributes such as lather and clarity of the laboratory shampoo are not comparable with the marketed shampoos. The foam volume is one par. In the present scenario, it seems improbable that herbal shampoo, although better in performance and safer than the synthetic ones, will be popular with consumers. Formulators must play an active role in educating the consumers about the potential harmful effects of synthetic detergent in shampoos. There is a strong need to change the consumer

perceptions of a good shampoo and the onus lies with the formulators.

### REFERENCES

- [1]. Mithal B.M.& Saha R.N. "A Handbook of Cosmetic" Vallabh Prakashan, New Delhi, Firstedition, 110-112, (2002).
- [2]. Aghel N., Moghimipour B. and Dana R.A., Formulation of a Herbal Shampoo Using Total Saponins of *Acanthophyllum squarrosum*, Iranian Journal of Pharmaceutical Research.6(3); 2007: 167-172.
- [3]. Mainkar, A. and Jolly, C. Formulation of natural shampoos. Int. J. Cosmet. Sci. 23(1); 2001: 59-62.
- [4]. Mainkar and Jolly. Evaluation of commercial herbal shampoos. Int. J. Cosmet. Sci. 22(5); 2000: 385-391.
- [5]. B. M. Mithal and R. N. Saha, Handbook of cosmetics, first edition, Vallabh Prakashan 2003: 1-10,110-121.