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Review Article

A Review on Formulation and Evaluation of Herbal Shampoo

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ABSTRACT

The primary goal of this review is to create and evaluate an herbal shampoo, as well as to discover its physiochemical function, with a focus on the product's safety, efficacy, and quality. Herbal Shampoo is a natural haircare solution that removes grease, dirt, and dandruff while also encouraging hair growth, strength, and darkness. It also provides softness, smoothness, and shines for the hair. Various drugs are used for the preparation of cosmetics shampoo. Such drug shows various side effects such as hair loss, increased scaling, scratching, discomfort, nausea and headache. Therefore an attempt is made to formulate herbal shampoo that is free from side effects. Herbal shampoo was prepared by simple mixing process. The herbal shampoo was tested for physicochemical properties. Some of the methods are visual inspection, pH determination, solubility check, cleansing action, determination of percentage solid content etc. The combination of several such ingredients of herbal origin has made it possible to secure highly effective dry powder shampoo. The formulation at laboratory scale was done and evaluated for number of parameters to ensure its safety and efficacy. The current review deals with the enormous amount of scientific research, reports and patents available in different aspects of the herbal hair oil for the treatment of hair disorders. The outcomes show that the shampoo's conditioning effectiveness is good and on par with shampoo that is readily accessible in stores. To increase its quality and safety, though, more study and development are needed.

INTRODUCTION

Hair is one of the vital parts of the body derived from ectoderm of the skin and is protective appendages on the body and considered accessory structure of the integument along with sebaceous glands, sweat glands and nails. They are also known as epidermal derivatives as they originate

from the epidermis during embryological development. Hair is an important part of the overall appeal of the human body. The primary function of shampoo is aimed at cleanse the hair necessitated due to accumulated sebum, dust, scalp debris, etc. Various shampoo formulations are associated with hair quality, hair care habits, and

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specific problems such as the treatment of oily hairs, dandruff, and for androgenic alopecia. Shampoos are liquid, creamy, or gel-like preparations. Shampoo goes well beyond simply cleansing the scalp. In addition to cleaning, it makes the hair manageable, simple to comb, and convenient to use. When used, hair products clean both your scalp and hair when applied to the scalp. Shampoos made from herbs are incredibly good for hair. Same to ordinary shampoo, herbal shampoos are made from natural ingredients and intended to clean the hair and scalp. Since there are no surfactants used, these shampoos are stable, have less negative side effects, and are safer than synthetic shampoo.

History

In the Indian subcontinent, a variety of herbs and their extracts have been used as shampoos since ancient times. A very effective early shampoo was made by boiling Sapindus with dried Indian gooseberry (amla) and a selection of other herbs, using the strained extract. Sapindus, also known as soapberries or soapnuts, a tropical tree widespread in India, is called ksuna[3]. In ancient Indian texts and its fruit pulp contains saponins which are a natural surfactant. The extract of soapberries creates a lather which Indian texts called phenaka[4]. It leaves the hair soft, shiny and manageable. Other products used for hair cleansing were shikakai (*Acacia concinna*), hibiscus flowers,[5][6] ritha (*Sapindus mukorossi*) and arappu (*Albizia amara*)[7]. Guru Nanak, the founder and the first Guru of Sikhism, made references to soapberry tree and soap in the 16th century.

Herbal shampoo

Shampoos are generally likely utilized as embellishing. It is a hair care item that is utilized for purify scalp and hair in our regular routine. Shampoos are in all probability used as embellishing specialists. Furthermore, are tacky arrangement of cleansers containing reasonable

added substances additives and dynamic Fixings. It is generally applied on wet hair, Massaging into the hair, and purged by rinsing with water. The motivation behind this study was intended to formulate a herbal shampoo and evaluate its physicochemical properties. The prepared formulation is also compared with the marketed shampoo. Few tests such as Physical appearance pH, wetting time, % of solid contents, foam volume and foaming stability, surface tension, dirt dispersion etc. were done for both herbal formulation and synthetic formulation.

Requirements of Shampoo

It should not harm the hair or scalp and shouldn't be poisonous. Sebum and environmental toxins ought to be eliminated from scalp hair. It ought to be simple to remove after rinsing with water. To meet the user's expectations, it ought to deliver the ideal amount of foam. It ought to get rid of any leftovers from earlier hair styling lotion and spray applications.

Ideal characteristic of a shampoo

1. It should effectively and fully remove duster soil, inordinate sebum or other adipose substances and loose corneal cells from the hair.
2. It should produce a good quantum of froth to satisfy the cerebral conditions of the stoner.
3. It should be fluently removed on irrigating with water.
4. It should conduct a affable fragrance to the hair.
5. It shouldn't beget any side - goods/ vexation to skin or eye. 6) It shouldn't make the hand rough and chapped.
6. To make the hair smooth and candescent.
7. Produce good quantum of froth.
8. Shouldn't beget irritant to crown, skin and eye.
9. Should fully, effectively remove dirt.
10. conduct affable scent to hair.

Classification of shampoo:



1. Based on appearance- Gel shampoo, Powder shampoo, Oil shampoo , Liquid shampoo
2. Based on use or function- Conditioning shampoo, Antidandruff shampoo, Baby shampoo, Clarifying shampoo
3. Based on origin- Herbal shampoo
3. It should produce a good amount of foam to satisfy the user.
4. It should be readily removed by rinsing with water.
4. It should impart a pleasant fragrance to the hair.
5. It should not have any side effects or causes irritation to the skin and eye.

Ideal properties of herbal shampoo

1. It should not cause irritation to eye, scalp.
2. It should produce good amount of foam.
3. It should completely, effectively remove dirt.
4. It should impart pleasant fragrance to hair.
5. It should be easily removed on rinsing with water.

Functions of Shampoo

1. It should effectively and completely remove dirt or soil.
2. It should effectively wash the hair.

Formulation of herbal shampoo

Formulation of the herbal shampoo was done as per the formula given in Table 1. To the gelatin solution (10%), added the herbal extract and mixed by shaking continuously at the time interval of 20 min. 1 ml of lemon juice was also added with constant stirring. To improve aroma in the formulation, sufficient quantity of essential oil (rose oil) was added and made up the volume to 100 ml with gelatin.

Preparation of herbal shampoo

Table No. 01 Formula Of Shampoo

Sr. No.	Ingredient	Quantity	Property of ingredient
01	Fenugreek	0.75gm	Promotes hair growth
02	Ritha	2.1 gm	Detergent
03	Amla	6.4gm	Help enhance hair texture
04	Shikakai	6.4gm	Antidandruff
05	Neem	2.1 gm	Prevent the dryness of hair
06	Methyl paraben	Qs	Preservation

Procedure: -

Take 1 tablespoon of powdered Shikakai
 ↓
 Take 1 tablespoon Powdered Reetha
 ↓
 Take 3/4th tablespoon of powdered Amla.
 ↓
 Take ½ tablepoons of Neem powder
 ↓
 ¼ tablespoon of ground cinnamon powder Fresh spring rosemary (optional)
 ↓
 Add few drops of your favourite essential oil (lavender, rosemary, peppermint, etc.) And 3 cups of water
 ↓
 Then Prepare it by combining all herbs and spring rosemary in a small pot on the fire
 ↓
 Add 2 cups of water and bring it to simmer.
 ↓
 Once the ingredients start to foam, keep a watch on it.
 ↓
 Do not bring it to boil. Heat it on low flame without covering for 15 minutes
 ↓
 Use a washcloth or a filter to sieve out the oil
 ↓
 Remember, it will take a lot of time to drain.
 ↓
 Then Collect this in a cup or bowl.
 ↓
 Now, you can add your choice of essential oils.
 ↓
 Then add water and transfer to a better container for regular usage.

Fenugreek



Fig 1 Fenugreek

Biological source –

Dried ripe seeds of *Trigoneliafoenum graecum*.

Family –

Leguminosae.

Uses –

Promotes hair growth

Reetha



Fig 2 Reetha

Biological source –

Dried fruits of *Sapindusmukorossi*.

Family –

Sapindaceae .

Uses –

detergent cleansing agent and antidandruff.

Shikakai



Fig 3 Shikakai

Biological source –

dried pores of *acasiaconcinna* .

Family –

Mimosaceae.

Uses –

foam base cleansing agent and anti dandruff .

Neem



Fig 4 Neem

Biological source –

dried leaves of *azadirachta indica*.

Family –

Miliaceae.

Uses –

prevent the dryness of hair and flaking of hair.

Amla



Fig 5 Amla

Biological source –

dried ripe fruit of *Embolicoffcinalis*.

Family –

Euphorbiceae.

Uses –

Darkening of hair and hair growth promotor .

Evaluation of Shampoo

1. pH test:-

Developed formulation was diluted using distilled water to prepare a sample with 10 %

concentration. The prepared sample was checked for pH using a digital pH meter at room temperature $30 \pm 2^\circ\text{C}$.



Fig 6 ph test

2. Foaming ability and foam stability:-

Foaming ability was evaluated using the cylinder shake method. 3ml of shampoo was taken, and 10ml of water was added to dilute it. Shake the cylinder vigorously in under a second twice, then leave it alone for 15 uninterrupted minutes. After shaking, the total volume of foam content was measured. Only the foam volume was computed. The amount of foam produced immediately after shaking was measured four times, every one minute. The foam volume remained constant over the course of around 5 minutes, demonstrating that the shampoo's foam generation process produces foam that is both stable and exhibits higher foam properties.



Fig 7 Foaming ability and foam stability test

3. Surface Tension:-

The cleaned stalagmometer was filled to mark A with the prepared shampoo that would be tested. The amount of drips that the liquid will produce as it travels from mark A to mark B was then computed once it started to rain owing to gravity. To determine the mean value, the process was

performed three times. The surface tension can then be determined using the formula.



Fig 8 Surface Tension Test

4. Wetting test:-

The length of time the canvas paper needed to soak up all the water was determined as the wetting time. A disc with a 1-inch diameter was made from a piece of canvas paper weighing 0.44g. The canvas paper disc was placed over the shampoo (1% v/v) surface, and the amount of time it took for the paper to sink was calculated using a stopwatch.



Fig 9 Wetting test

5. Stability study:-

The stability of the formulation was studied for a period of 4 weeks by keeping at temperature of $25-30^\circ\text{C}$. The shampoo is free from microbial contamination and remains stable at room temperature.

6. Percent of solid content:-

Weighing a piece of dry, clean China, we added 4 ml of shampoo. The shampoo-filled dish was weighed. It was computed how much shampoo exactly weighed. The shampoo-filled porcelain

dish was placed on the hot plate and left there until the liquid evaporated. After drying, the weight was calculated.

7. Measurement of viscosity:-

The viscosity of the shampoo was determined by using Brookfield Viscometer LVDV Prime-I. The viscosity of shampoo was measured at room temperature i.e. $30 \pm 2^\circ\text{C}$ with varying rpm and torque.

Table no.02 evaluation of shampoo

EVALUATION PARAMETER OBSERVATION	OBSERVATION
Appearance	Good foaming
Foam Index	Good -33.3
pH	6.67 ± 0.01
Clarity	Clear solution
Wetting Ability	3 sec
Determination of % solid Content	35 % solid Content
Surface tension	47.78 ± 1.5

DISCUSSION

Herbal shampoo formulation is mainly composed of herbal extracts which were found as rich source of useful chemical constituents. Parts of plants such as Reetha, had been reported hair growth, anti-dandruff, cleansing and conditioning actions. All the required quantity was collected and the necessary evaluation parameters shown positive and acceptable results. The results depicted in study shows that when these herbal extracts are incorporated in shampoo it gives effective product with good appearance and patient compliance. The pH of shampoo is good which helps in improving the hair texture and maintains the pH of scalp. The evaluation parameters like visual inspection, pH determination, solubility check, viscosity determination, surface tension measurement etc. are carried out and the results were good.

CONCLUSION

The present study was carried out to prepare an herbal shampoo that reduces hair loss during combing, is safer than chemical conditioning agents as well as strengthens hair growth. Herbal

shampoo was formulated with the aqueous extract of medicinal plants that are commonly used for cleansing hair traditionally. Use of conditioning agents (synthetic) reduces protein or hair loss. To provide effective conditioning effects, the present study involves the use of shikakai, amla, and other plant extracts instead of synthetic ones. cationic conditioners. The main purpose behind this investigation was to develop a stable and functionally effective shampoo by excluding all types of synthetic additives, which are normally incorporated in such formulations. To evaluate for good product performance of the prepared shampoo, many tests were performed. The results of the evaluation study of the developed shampoo revealed a comparable result for the quality control test, but further scientific validation is needed for its overall quality.

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