

Formulation and Evaluation of Herbal Shampoo

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Abstract: *The objective of this study is to formulate and evaluate poly-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 it's 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: Cosmetic, Herbal shampoo

I. INTRODUCTION

Shampoos are most probably used as cosmetics. It is a hair care product that is used for cleaning scalp and hair in our daily life. Shampoos are most likely utilized as beautifying agents and are a viscous solution of detergents containing suitable additives preservatives and active ingredients. It is usually applied on wet hair, massaging into the hair, and cleansed by rinsing with water. The purpose of using shampoo is to remove dirt that is build up on the hair without stripping out much of the sebum. Many synthetic shampoos are present in the current market both medicated and nonmedicated; however, herbal shampoo popularized due to natural origin which is safer, increases consumer demand and free from side effects.

In synthetic shampoos, surfactants (synthetic) are added mainly for their cleansing and foaming property, but the continuous use of these surfactants leads to serious effects such as eye irritation, scalp irritation, loss of hair, and dryness of hairs. Alternative to synthetic shampoo we can use shampoos containing natural herbals. However, formulating cosmetic products containing only natural substances are very difficult. There are a number of medicinal plants with potential effects on hair used traditionally over years around the world and are incorporated in shampoo formulation. These medicinal plants may be used in extracts form, their powdered form, crude form, or their derivatives.

To develop a shampoo containing an only one natural substance which would be safer with milder effect, then the synthetic shampoo is difficult and also it should possess good foaming, detergency, and solid content as such synthetic shampoo. Hence, we considered in detailing an unadulterated natural cleanser utilizing conventional technique using regularly utilized plant material for hair washing. A shampoo is basically a solution of a detergent containing suitable additives for other benefits such as hair conditioning enhancement, lubrication, medication etc. Now-a-days many synthetic, herbal, medicated and non medicated shampoos are available in the market but popularity of herbal shampoo among consumers is on rise because of their belief that these products being of natural origin are safe and free from side effects. Synthetic surfactants are added to shampoo primarily for the foaming and cleansing action but their regular use leads to dryness of hairs, hair loss, irritation to scalp and eyes

.Herbal formulations are considered as alternative to synthetic shampoo but formulating cosmetics using completely natural raw material is a difficult task. There are large numbers of medicinal plants which are reported to have beneficial effects on hair and are commonly used in formulation of shampoo.



These plant products may be used in their powdered form, crude form, purified extracts, or derivative form. It is extremely difficult to prepare a herbal shampoo using a single natural material that would be milder and safer than the synthetic ones, and at the same time would compete favorably with its foaming, detergency and solid content. We, therefore, considered to formulate a pure herbal shampoo using traditional and commonly used plant materials for hair washing in India and Gulf region especially in Oman.

LITERATURE REVIEW

1. Mainkar AR, Joly

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.

2. Aghel N. Moghimipour B. Dana RA

Shampoos are products which remove surface grease and dirt from the hair shaft and scalp

3. Potluri A, Asma SS, Rallapally N, Durrivel S, Harish GA.

Dandruff is a common disorder affecting the scalp condition caused by yeast *Pityrosporum*

4. Shinde PR, Tatiya AU, Surana Si

The study by Shinde, Tatiya, and Surana in the International Journal of Research in Cosmetic Science focuses on developing and evaluating an herbal anti-dandruff shampoo. The researchers aim to formulate a shampoo using natural ingredients and assess its effectiveness and safety by comparing it with conventional chemical shampoos. The study evaluates the shampoo's physical properties, physicochemical properties, and performance parameters like wetting time, foam stability, and detergency. The findings demonstrate that the herbal shampoo formulation is clear, has good froth stability, detergency, and conditioning properties, indicating its potential as a safe and effective alternative to chemical anti-dandruff shampoos.

5. Firthouse PU.

Effects of *Ocimum sanctum* and *Azadiracta indica* on the and deposition of salt on hair shaft. Dandruff is a major problem in hair. In this study, the antidandruff herbal shampoo powder was formulated and evaluated various tests such as swelling index, foaming index, Antimicrobial activity and eye and skin irritation test etc. This study was designed to determine the antidandruff activity on the formulated herbal shampoo powder.

6. Kapoor VP, Herbal cosmetics for skin and hair care

The image appears to be a citation from an academic journal or book. It references a work by Kapoor VP titled "Herbal cosmetics for skin and hair care" published in "Nat Prod Radiance."

7. Khushboo PS, Jadhav VM, Kadam VJ,

Plants have been the basis of many traditional medicines throughout the world for thousands of years and continue to provide new remedies to mankind. Plants have been one of the important sources of medicines since the beginning of human civilization. The recent resurgence of plant remedies resulted from several factors, such as effectiveness of plant medicines and lesser side effects compared with modern medicines. *Psoralea corylifolia*, commonly known as babchi, is a popular herb, which has since long been used in traditional Ayurvedic and Chinese medicine for its magical effects to cure various skin diseases.

8. Sivasuki KP.



Amla (*Emblica officinalis*) is the most celebrated herb of traditional systems of medicine in Asia particularly in South and South-east Asia and is Called Amalaki or Dhatriphala in Sanskrit. The tree is found in all deciduous forests throughout the Indian subcontinent. Amla is a commonly used ingredient in most of the Ayurvedic preparations in the form of Fresh Fruits, Dried Fruits, Fruit Pulp or as Extract.

Chyavnaprash which constitutes 70% Of the Amla formulations is immune enhancer and a health tonic for both Children and Elders. The eminence of amla is so well recognised in Ayurveda that all the famous ancient texts have discussed its preventive, restorative and curative usefulness and extolled its extraordinary medicinal qualities. It promotes iron absorption and hence can combat anaemia which is prevalent among women and children in rural areas.

9. Tarun J, Susan J, Suria J, Susan VJ, Criton S.

The provided text refers to a research article titled "Hair growth promoting activity of *Eclipta alba* in male albino rats," by Roy RK, Thakur M, and Dixit VK, published in Arch Dermatol Res. This study investigated the potential of *Eclipta alba*, a plant commonly known as false daisy, to stimulate hair growth in male albino rats. The research was published in the Archives of Dermatological Research journal.

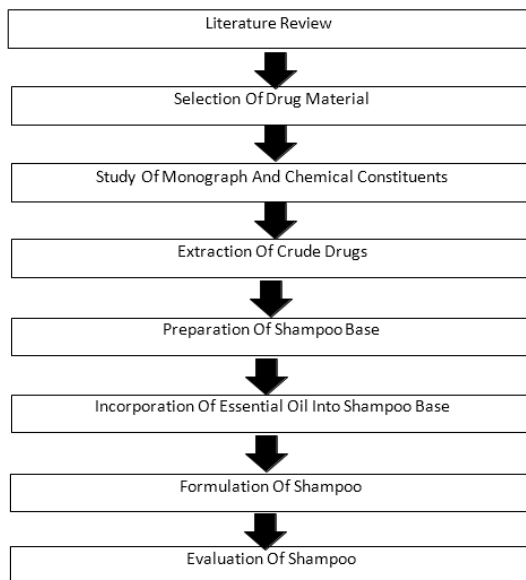
AIM AND OBJECTIVE:

Aim: Formulation and evaluation of liquid herbal shampoo.

Objective:

- 1] Herbal shampoo are made out of pure and organic ingredients and there are no synthetic additives or surfactants are free of any side effects.
- 2] bio-degradable and earth friendly.
- 3] It doesn't cause irritation to the eyes.
- 4] It is cost friendly, not much expensive.
- 5] Regular usage of herbal shampoo can do wonders for your hair.
- 6] By using herbal shampoo, you can get the perfect oil balance.

PLAN OF WORK:



BENIFITS OF HEARBAL SHAMPOO:-

1. More Shine
2. Less Hair Loss
3. Long Lasting Colour
4. Stronger and More Fortified Hairs
5. All Natural, No Chemicals
6. Wont Irritate Skin or Scalp
7. Keep Healthy Natural Oil



Fig:- 1. Amla ,Shikkakai And Reetha Ayurvedic Shampoo

◆ FUNCTION OF HEARBAL SHAMPOO:-

- i. Lubrication
- ii. Conditioning
- iii. Hair Growth
- iv. Maintenance of Hair Colour
- v. Medication.

◆ DESIRED PROPERTIES OF HEARBAL SHAMPOO:-

1. Ease of Application
2. Removal of More Debris
3. Easy Wet Combing
4. Fragrance
5. Low Level of irritation
6. Well Preserved
7. Good Stability..

ADAVANTAGES OF HERBAL SHAMPOO:-

- Pure and Organic Ingredient
- Free from Side Effect
- Symptomatic relief
- Readily available



- no Surfactants
- That chronic condition
- effective cost
- Stimulate the scalp for healthy hair growth
- Leaves hair soft shiny and manageable
- Low risk of side effects



❖ **Disadvantages of herbal shampoo**

- It fades the structure and shine
- It can made your hair dry and freezy It dries out the scalp
- You may also experience dandruff
- You can experience breakage
- It can causes more slit end





Fig 3. Formulations of shampoo

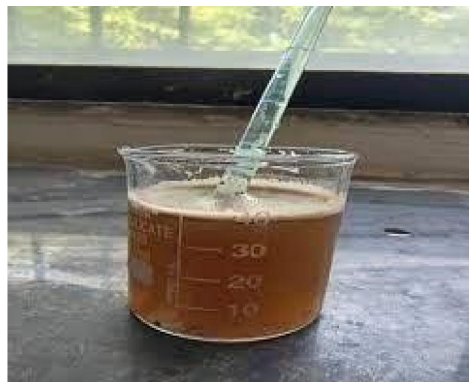


Fig 2. Sample of Shikakai



Fig 4. Ingredients

INGREDIENTS :-

Materials required	Quantity to be Weighed
Soap nut extract	0.5 g
Amla extract	0.5 g
Shikakai extract	0.5 g
Hibiscus	0.5 g
Bhingraj extract	0.5 g
Senna extract	0.5 g
Gelatin	q.s
Lemon Juice	q.s

DRUG PROFILE:-

1. Soap Nut Extract –
 - i. Stops Hair Fall
 - ii. Prevents Dandruff
 - iii. Fight Against Scalp Infection



2. Amla Extract :- Fig 5. Soap Nut Extract

- i. Strengthen the Scalp and Hair.
- ii. Reduce premature pigment loss from hair, or greying.
- iii. Stimulate Hair Growth. iv. Reduce Hair Loss.
- v. Prevent or treat dandruff and dry scalp.
- vi. Prevent or treat Fungal and Bacterial hair and Scalp infections.
- vii. Improve overall appearance of Hairs

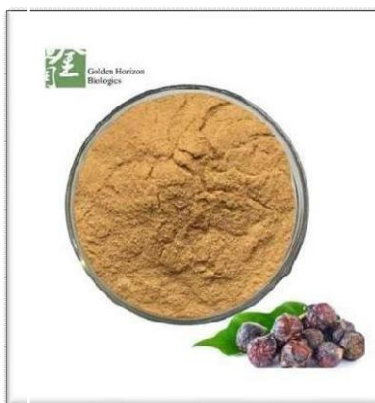


Fig 6. Amla Extract

3. Shikakai Extract :-

- i. Cleanses Hair.
- ii. Add more Shine to the Hairs,.
- iii. Prevents Grays.
- iv. Crubs Hair Loss
- v. Prevents Lice, Psoriasis, Eczema & Scabies.
- vi. Provides Nourishment to the hair and promote healthy and rapid hair growth.
- vii. Prevents Split ends.



Fig 7. Shikakai Extract

5. Bhringraj Extract: –

- i. Treats baldness and helps in growth of hairs.
- ii. Makes Hair Lustrous





Fig 8. Bhringraj Extract

6. Senna Extract :-

- i. Strong Hairs
- ii. Great Conditioner
- iii. Combats Hair Loss



Fig 9. Senna Extract

8. Gelatin: -

- i. Gelatin Can improve hair thickness and growth.
- ii. Gelatin supplement or placebo for 50 weeks to 24 people with alopecia.
- iii. It gives thickness to hairs. iv. For strengthening of Hairs



Fig 10. Gelatin

9. Lemon Juice: -

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- i. Add More shine.
- ii. Get rid of dandruff
- iii. Split ends
- iv. Reduces Hair fall
- v. Gives Natural colour to hairs
- vi. Detox the scalp
- vii. Promotes the growth of hairs
- viii. Great hair mask for dry and damage hair



Fig 11. Lemon Juice

DESCRIPTION OF THE INGREDIENTS –

S. No.	Common name	Pictures
1	Hibiscus	
2	Amla	
3	Shikakai	
4	Soapnut	

Method of preparation procedure:-

- 1] Formulation of the herbal shampoo was done as per the formula given in Table 1.
- 2] To the gelatin solution (10%), added the herbal extract and mixed by shaking continuously at the time interval of 20 min.



3] 1 ml of lemon juice was also added with constant stirring.

4] 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.

EVALUATION OF HERBAL SHAMPOO :-

The prepared formulation was evaluated for product performance which includes organoleptic characters, pH, physicochemical characterization, and for solid content. To guarantee the nature of the items, particular tests were performed for surface tension, foam volume, foam stability, and wetting time using standard protocol.

1] Visual assessment: – The prepared formulation was assessed for color, clarity, odor, and froth content.

2] pH determination :- The pH of the prepared herbal shampoo in distilled water (10% v/v) was evaluated by means of pH analyzer at room temperature .

3] Surface tension measurement :- The prepared shampoo in distilled water (10% w/v) was evaluated for surface tension using stalagmometer in room temperature .

4] Testing of wetting :- Wetting time was calculated by noting the time required by the canvas paper to sink completely [3]. A canvas paper weighing 0.44 g was cut into a disc of diameter measuring 1-inch. Over the shampoo (1% v/v) surface, the canvas paper disc was kept and the time taken for the paper to sink was measured using the stopwatch

5] Foam stability test: – The stability of the foam was determined using cylinder shake method. About 50 ml of formulated shampoo (1%) solution was taken in a graduated cylinder of 250 ml capacity and shaken for 10 times vigorously. Foam stability was measured by recording the foam volume of shake test after 1 min and 4 min, respectively . The total foam volume was measured after 1 min of shaking.

6] Dirt dispersion test: –

To 10 ml of refined water two drops of cleanser were included and taken in a wide- mouthed test tube. To the formulated shampoo, added one drop of Indian ink and shaken for 10 min after closing the test tube with a stopper. The volume of ink in the froth was measured and the result was graded in terms of none, slight, medium, or heavy.

7] Conditioning performance evaluation: –

An artificial hair tress of Indian women was received from a salon and divided into two swatches of length 10 cm approximately, weighing 5 g. The control swatch was the one without washing and the test swatch using the formulated shampoo was washed with. Each tress was added for 2 min to the combination of shampoo in water in the proportion 10:15 taken in a conical flask and washed using 50 ml of distilled water. Each tress was air dried at room temperature and the procedure was repeated for maximum of 10 times. The conditioning effect of the prepared shampoo in terms of softness and smoothness was determined using a blind touch test using volunteers of student 20 numbers selected randomly . The conditioning performance of the shampoo was rated in terms of Score 1–4 (4 - excellent, 3 - good, 2 - satisfactory, and 1 - poor) by asking all the selected students to touch the tress washed with prepared shampoo

PHYSICOCHEMICAL PROPERTIES OF HERBAL SHAMPOO:-

Evaluation test	Formulated Shampoo
Colour	Brown
Transparency	Clear
Odour	Good
pH of 10% solution	7
Solid contents (%)	23.25
Foam volume (ml)	25
Foam type	Dense, small
Surface tension (dynes/cm)	35.18
Wetting time (s)	120 s



LIMITATIONS OF HERBAL SHAMPOO

1. Natural products affect product uniformity, Quality control.
2. Seasonal variation of plant constituents.
3. Less stable, So preservatives should be added.
4. Vary in consistency from batch to batch.
5. Air loss shampoos contain essential vitamins and minerals, which supposedly can stop your receding hairline with regular usage.
6. Most of these shampoos are priced in between \$10-200 per bottle, which is why they are such an appealing choice to treat hair loss.
7. Plus, unlike other hair treatments, you can get shampoos in just about any retail store or online, which is convenient.
8. However, while inexpensive shampoos may seem promising as a simple solution to male pattern balding, many of them cannot back up their claims for the most part.
9. Additionally, many of the shampoo products on the market today contain sodium lauryl sulfate, which has been linked to a worsening of thinning hair in men.
10. Hair loss is a complicated situation and can be caused by any one of many things.
11. One of the most common causes is an imbalance in hormones, which cannot be treated by shampoos.
12. Specifically, high DHT levels are the most common cause of alopecia in men and no shampoo alone can block DHT from causing your hair to fall out if you are already experiencing it.
13. The major problem with shampoos is that they are merely topical cleansers; they cannot penetrate the scalp or hair follicles.
14. They can provide some level of DHT-reduction at the surface level, but it is in minimal compared to taking an ingestible
15. Topical treatment that is absorbed by the scalp. For this reason, the positive effects of what a shampoo can do to prevent further alopecia is limited.

Evaluation of formulated shampoo :-

Physical Appearance pH

Solid Content

Surface Tension Wetting Time

Foaming ability and Foaming Stability Dirt Dispersion Test

Net Content

Conditioning Performance Physical appearance/visual inspection. The formulation prepared was evaluated for the clarity, color, odor .

Determination of pH. The pH of 10% v/v shampoo solution in distilled water was measured by using pH meter.

Determination of % of solid contents. The dish and shampoo was weighed again to confirm the exact weight of the...

Dirt dispersion test. Two drops of shampoo were added to 10 mL of distilled water taken in a large test...

RESULT: -

The shampoo was formulated by admixing the equal amount of the aqueous extracts of all the ingredients with soapnut . The above plant extract contains phytoconstituents like saponins which is a natural surfactant having detergent property and foaming property. An ideal shampoo must have adequate viscosity and many natural substances possess good viscosity. The gelatin solution (10%) behaves as a pseudoplastic forming clear solutions.

Lemon juice (1 ml) added to the shampoo serves as anti-dandruff agent, natural antioxidant, and chelating agent and maintains the acidic pH in the formulation.

II. CONCLUSION

The present study was carried out with the aim of preparing the herbal shampoo that reduces hair loss during combing, safer than the chemical conditioning agents as well as to strengthen the 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 the protein or hair loss. To provide the effective conditioning effects, the present study involves the use of shikakai, amla, and other plant extracts instead of synthetic 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 quality control test, but further scientific validation is needed for its overall quality.

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