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Formulation and Evaluation of Herbal Shampoo

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ABSTRACT

The aim of this present study is to prepare and formulate an herbal shampoo and to assess its physicochemical properties that emphasis on safety, efficacy, eliminating harmful synthetic ingredient and substitute with safe active natural ingredients. 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. Several quality control tests such as physical appearance/ visual inspection, solid contents, foam test, dirt dispersion test and Testing of wetting tests were performed to determine the physicochemical properties of formulated herbal shampoo. The main objective of this study was to eliminate harmful synthetic ingredient from herbal shampoo formulation and substitute them with a safe natural ingredient.

Keywords: Herbal shampoo, crude drug extraction, hair hygiene, hair care, evaluation of shampoo.

1. INTRODUCTION

Hairs are the fundamental a part of human. Hair is likewise a crown for human beings for this reason, hair require unique care to maintain it shiny, smooth, tough to damaged and smooth to combed. People are the usage of natural merchandise for handling hair, cleaning, and beautifying cause due to the fact historical era. Shampoos are usually used as a beauty product its miles a hair care product this is used for cleaning, beautifying, handling hair in our day-by-day life. Shampoo is one of the beauty merchandise which is used to cleanse dust this is building up at the hair. Shampoos are a viscous answer detergent containing appropriate components preservative and lively ingredients.

Nowadays many natural, artificial, medicated and non- reflected shampoos are to be had in market. As the time has exceeded artificial agent have taken a massive proportion however these days human beings are becoming aware about their dangerous outcomes on hair, pores and skin and eyes. However natural shampoo popularized because of herbal beginning that's safer, will increase purchaser call for and negligible side. Shampooing is the maximum not unusual place shape of hair remedy. Shampoos are liquid, creamy or gel like preparations. Indian ladies use herbals together with shikakai, gooseberry and Reetha which are herbal cleaning marketers without dangerous outcomes.[1]

2.1 ANTAMONY OF HAIR: [2]

The hair is made up of 95% keratin a fibrous, helicoidal protein (shaped like a helix) that forms part of the skin and all its attachments (body hair, nails etc.).

The hair structure consists of 3 different parts:

- **Medulla:** It is the innermost layer of the hair shaft, made up of an amorphous, soft, oily substance.
- **Cuticle:** Thin protective outer layer that contains nutrients beneficial for hair growth.
- **Cortex**: It is the main constituent of the hair, containing long keratin chains which give elasticity, suppleness and resistance to the hair.

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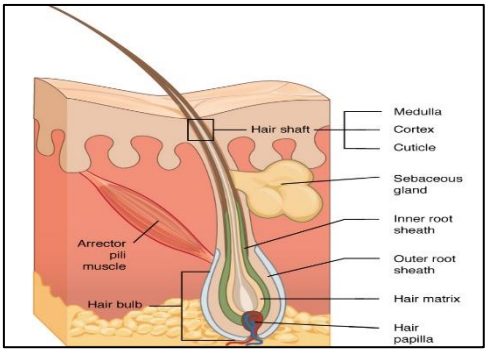

Fig. 1: HAIR STRUCTURE [3]

2.2 HAIR PROBLEMS: [4]

• **HAIR LOSS:** The main reason behind the hair loss is Stress, medication, changes in hormone and many hair styling products can contribute to hair loss.

Fig. 2: Hair Loss Problem

• **OILY HAIR/GREASY HAIR:** Oily hair is caused by excessive production of natural oil (sebum) by the scalp. Sebum is produced by sebaceous glands which sometimes "work overtime'' leading to excessive amount of oil.

Fig. 3: Oily Hairs

• **DANDRUFF:** Dandruff is a non-inflammatory harmless skin condition that affects scalp and might result in hair loss. It is scaly and adheres to the root of the hair.

Fig.4: Dandruff Problem in Hair

• **DRY HAIR:** Dry hair occurs due to deficiency of proteins in the diet. Menopause, anemia, hormonal imbalance, birth control pill can also lead to dry hair.

Fig. 5: Dry Hair Problem

2.3 ADAVANTAGES OF HERBAL SHAMPOO

1. Pure and Organic Ingredient.
2. Free from Side Effects.
3. No Synthetic Additives.
4. No Animal Testing.
5. Earth and Skin Friendly.
6. Promote hair growth.
7. Reduce hair loss.
8. Improves quality of hair.

3. AIM AND OBJECTIVE

The main aim of herbal shampoo formulation and evaluation is to create a shampoo using natural ingredients that is both safe and effective, while eliminating or reducing the use of potentially harmful synthetic chemicals.

3.1 OBJECTIVES

1. To formulate the herbal shampoo.
2. To evaluate the herbal shampoo.
3. To reduce side effects of chemical formulation.
4. To improve hairs texture.
5. To imparting gloss to hair and to maintain their manageability and oiliness for hairs.[5]

3.2 PLAN OF WORK

1. Collection of plant material
2. Extraction of herbal drugs
3. Development of formulation
4. Evaluation of prepared formulation

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4. DRUG PROFILE

1. REETHA

Synonyms	soapberry, Aritha, Arishtak
Botanical Name	Sapindus Mukorossi
Family	Sapindaceae
Biological Source	It is the fruit pericarp of the sapindus tree

Fig. 6: Reetha [6]

2. AMLA

Synonyms	Amalaki, Amlika, Anola
Botanical Name	Phyllanthus Emblica
Family	Phyllanthaceae
Biological Source	It is the fruit of the Emblica officinalis

Fig. 7: Amla [7]

3. SHIKAKAI

Synonyms	Saptala, Satala, Sege
Botanical Name	Acacia Concinna
Family	Fabaceae
Biological Source	Shikakai is the dried pods, seeds, leaves, and bark of the acacia cocinna plant

Fig. 8: Shikakai [8]

4. ALOE VERA

Synonyms	Korphad, Ghikunvar, Ghritkumari
Botanical Name	Aloe barbadensis
Family	Liliaceae
Biological Source	Aloe is the dried juice collected by incision, from the bases of the leaves of various species of aloe

Fig. 9: Aloe Vera [9]

5. LEMON JUICE

Synonyms	Nimbu, Limon, Citrus lemon
Botanical Name	Citrus Lemon
Family	Rutaceae
Biological Source	Lemon refers to the plant material from which its various components, juice are derived.

Fig. 10: Lemon Juice [10]

6. ROSE OIL

Synonyms	Attar, Roses, Rose essence
Botanical Name	Rosadamascena
Family	Rosaceae
Biological Source	Rose oil is primarily the petals of various rose species, most notably Rosa damascene

Fig. 11: Rose Oil [11]

7. GELATIN

Uses:

- It can improve hair thickness and growth.
- For strengthening of hairs.
- Improving shine and manageability.
- Reduce hair loss.
- Support hair growth.

Fig. 12: Gelatin [12]

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5. MATERIALS AND CHEMICALS:

5.1 LIST OF HERBS

Table 1: LIST OF HERBS

Sr.no.	Name
1	Amla
2	Shikakai
3	Aloe vera
4	Reetha

5.2 LIST OF CHEMICALS

Table 2: LIST OF CHEMICALS

Sr. no.	Chemicals	Produced from
1	Methanol	Research lab fine chem. Industries, Mumbai - 400002 (India)
2	Gelatin	Powderpack.co. Borivali, (west) Mumbai - 4000092
3	Methyl paraben	Research lab fine chem. Industries, Mumbai - 400002 (India)
4	Distilled water	Recombigen laboratories, pune
5	Rose oil	Dabur India LTD, pant nagar, Uttrakhand - 263146

5.3 GLASSWARES

- Measuring cylinder (50,100 ml)
- Glass beaker (50,100 ml)
- Glass rods
- Funnels
- Evaporating dish
- Mortar pestle
- Conical flask
- Droppers or pipettes

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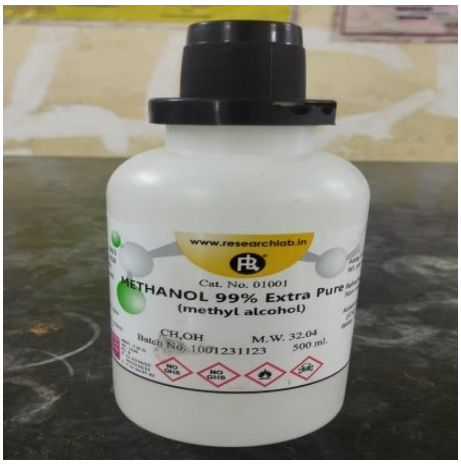

Fig. 13: Methanol

Fig. 14: Methyl Paraben

Fig. 15: Distilled Water

6. FORMULATION OF HERBAL SHAMPOO

Table 3: FORMULATION OF HERBAL SHAMPOO

Sr.no.	Ingredients	Quantity (gm)	Uses
1	Reetha extract	2.5 gm	Foaming agent
2	Amla extract	2.5 gm	Antidandruff agent
3	Shikakai extract	2.5 gm	Detergent
4	Aloe vera extract	2.5 gm	Moisturizing agent
5	Gelatin	q.s	Gelling agent
6	Methyl paraben	q.s	Preservative
7	Distilled water	q.s	Solvent
8	Lemon juice	q.s	Antimicrobial
9	Rose oil	q.s	Fragrance

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6.1 Manufacturing procedure of herbal shampoo

Step 1: Take 10gm of reetha powder into 30ml of ethyl alcohol.

Fig. 16: 10 gm of Reetha

Step 2: Take 10gm of amla powder into 50ml of water and boil.

Fig. 17: 10 gm of Amla

Step 3: Take 10gm of shikakai powder into 50ml of water and boil.

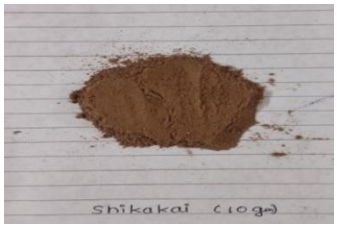

Fig. 18: 10 gm of Shikakai

Step 4: Take 10gm of aloe vera powder into 50ml of water and boil**.**

Fig. 19: 10 gm of Aloe Vera

Step 5: Take 1gm of gelatin powder into 50ml boiled water and again boil for 5 minutes.

Step 7: Now mix prepared gelatin solution into collected extract.

Fig. 20: Gelatin solution and Extract

Step 8: Makeup the total volume up to 100ml by adding gelatin solution.

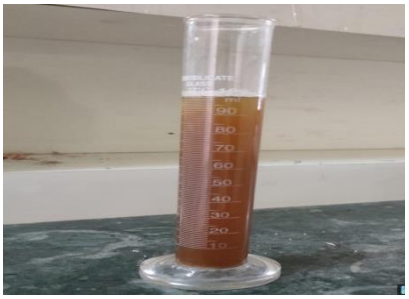

Fig. 21: 100 ml Herbal Shampoo Prepared

Step 9: Add few drops of rose oil into prepared solution for improving odour of solution.

Step 10: Herbal shampoo is prepared, add some drops of citric acid to maintain the pH of herbal shampoo.

7. EVALUATION OF HERBAL SHAMPOO [13,14,15,16,17]

The organized system used to be evaluated for product overall performance which includes organoleptic characters, pH, physicochemical characterization, and for solid content. To guarantee the nature of the items, particular tests were performed for foam volume, foam stability, and wetting time using standard protocol.

1. Visual assessment :

a. The prepared formulation was assessed for colour, clarity and odour.

b. I observed that the colour of herbal shampoo is brownish and odour is pleasant.

2. pH determination :

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

b. I observed that the pH of herbal shampoo is 7.

3. Foam stability test:

a. 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.

b. I observed that the foam of herbal shampoo is 2cm.

4. Testing of wetting:

a. Wetting time was calculated by noting the time required by the canvas paper to sink completely. 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.

b. I observed that the wetting time of herbal shampoo is 5 second.

5. Dirt dispersion test:

a. 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.
b. I observed that the colour of herbal is light in colour.

6. Determination of percentage of solids:

a. Prior to anything else, the weight of an empty, dry, and clean evaporating dish was determined and noted. The exact initial weight of the shampoo was determined by measuring the weight of the evaporating dish after a 4 gm sample was added. Shampoo was dried by placing the evaporating dish on a hot plate and monitoring the weight of the shampoo until it evaporated completely. Using the following formula, the percentage of solids was determined.

- Calculation :

1. Weight of empty evaporating dish (A) = 57.75
2. Weight of evaporating dish after evaporation (B) = 58.08
3. Weight of sample = (B) – (A)
   = 58.08 – 57.75
   = 0.33 gm

Total solid content = 0.33 gm
Therefore % solid content = (B) – (A) / 4 × 100
= 0.33/4 × 100
= 8.25%

b. I observed that the percentage of solids in herbal shampoo is 8.25%.

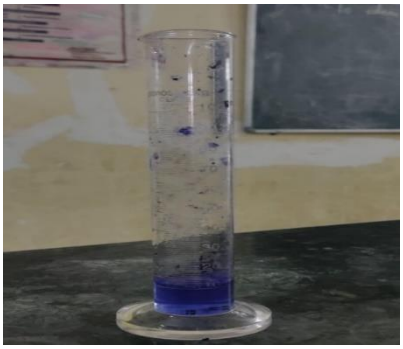

Fig.22: Dirt Dispersion Test

Fig. 23: Foam Test

Fig. 24: pH of Herbal Shampoo

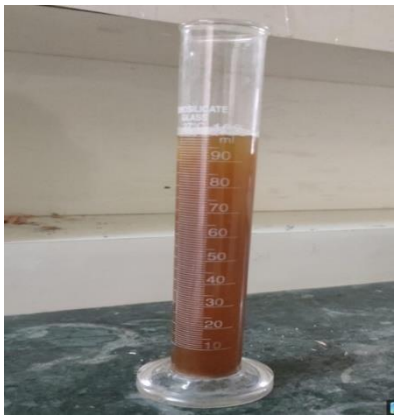

Fig. 25: 100 ml Prepared Herbal Shampoo

8. RESULT

Herbal shampoo was prepared and evaluated.

Table 4: RESULT OF HERBAL SHAMPOO

Sr.no.	Parameters	Observations
1	Colour	Brownish
2	Odour	Pleasant
3	Apperance	Turbid
4	pH	7
5	Fome stability	2cm
6	Wetting time	5 second
7	Dirt dispersion test	Light
8	% solid content	8.25%

The Formulated shampoo was clear and good appealing. It demonstrated good stability, detergency, cleansing, small bubble size, low surface strain and execute good conditioning property.

9. CONCLUSION

The applications and significance of herbal shampoo are the main topics of this review. Given that it is widely held that herbal products are risk-free and devoid of adverse effects, it also covers the awareness of and necessity for cosmetics containing herbal elements. It focuses on the kinds, preparation techniques, and assessment of polyherbal shampoos.

The purpose of this study was to create a shampoo that is entirely herbal and comparable to the synthetic shampoos that are sold now. We created a herbal shampoo by utilizing plant extracts, which are widely utilized in traditional Asian medicine and highly praised for their ability to cleanse hair. All of the components that go into making shampoo are safer than synthetic conditioning agents like silicones and polyquaterniums, and they also significantly lessen the loss of hair or protein when combing. To deliver the conditioning properties, we have used extracts from plants such as Shikakai, Amla, Aloe vera, Reetha and others, rather than cationic conditioners.

To assess and contrast the physicochemical characteristics of shampoos that were prepared and a number of tests were conducted. More investigation and improvement are needed to raise the product's overall caliber.

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