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## FORMULATION AND EVALUATION OF HERBAL SHAMPOO

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### Abstract:

In the present study, herbal shampoo was formulated containing suitable ingredient such as Hibiscus rosa-sinensis, Emblica officinalis, Acacia concinna, Sapindus indica, Eclipta prostrata, Aloe barbadensis, and Cassia auriculata in different proportions to formulate and evaluate its physicochemical properties.

**KEY WORDS-** HERBAL SHAMPOO; NATURAL & HEALTHY, *ECLIPTA PROSTRATA*, *SAPINDUS INDICA*, EVALUATION OF SHAMPOO.

### 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 traditionally and commonly used plant materials for hair washing in India and gulf region especially in Oman.

### 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 Oils



#### FUNCTION OF HERBAL SHAMPOO-

1. Lubrication
2. Conditioning
3. Hair Growth
4. Maintenance of Hair Colour
5. Medication

#### DESIRED PROPERTIES OF HERBAL 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

#### ADVANTAGES OF HERBAL SHAMPOO-

1. Pure and Organic Ingredient
2. Free from Side Effects
3. No Surfactants eg:- SLS
4. No Synthetic Additives
5. No Animal Testing
6. Earth And Skin Friendly
7. No Petroleum based 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
Bhringraj extract	0.5 g
Senna extract	0.5 g
<i>Aloe vera</i>	1 g
Gelatin	q.s
Lemon juice	q.s
Rose oil	q.s

## USE OF INGREDIENTS-

## 1. Soap Nut Extract –

- i. Stops Hair Fall
- ii. Prevents Dandruff
- iii. Fight Against Scalp Infection



## 2. Amla 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.



### 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.



### 4. Hibiscus –

- i. Stimulate Hair Growth & Lost hair volume & Luster over the years.
- ii. Conditions Hairs
- iii. Prevents Baldness (Minoxidil & Finasteride).
- iv. Treat Dandruff & Itchy Scalp.
- v. Prevents premature greying.



### 5. Bhringraj Extract –

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



### 6. Senna Extract –

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



### 7. Aloe Vera –

- i. Calms an itchy scalp.
- ii. Deep cleans oily hairs.
- iii. Strengthens
- iv. Aloe vera contains proteolytic enzymes which repairs dead skin cells on scalp.
- v. Promote hair growth
- vi. Smooth natural curls
- vii. Reduce frizziness
- viii. Detangle Hairs.



### 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



### 9. Lemon Juice –

- 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 hairs.










**10. Rose Oil –**

- i. It repairs hair damage
- ii. Improves Growth of hairs
- iii. Reduces the dandruff
- iv. Gives fragrance to the shampoo.



## DESCRIPTION OF THE INGREDIENTS –

S. No.	Common name	Pictures	Botanical name	Parts used
1	Hibiscus		<i>Hibiscus rosa-sinensis</i>	Flower
2	Amla		<i>Emblica officinalis</i>	Fruit
3	Shikakai		<i>Acacia concinna</i>	Powder
4	Soapnut		<i>Sapindus indica</i>	Fruit
5	Cassia		<i>Cassia auriculata</i>	Leaves
6	Bhringraj		<i>Eclipta prostrata</i>	Leaves, flower
7	<i>Aloe vera</i>		<i>Aloe barbadensis</i>	Leaf

## 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.

## 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.

## Visual assessment –

The prepared formulation was assessed for color, clarity, odor, and froth content.

## 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 .

## Surface tension measurement –

The prepared shampoo in distilled water (10% w/v) was evaluated for surface tension using stalagmometer in room temperature .

## 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.

**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.

**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.

**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 HEARBAL SHAMPOO –**

Evaluation test	Formulated shampoo
Color	Brown
Transparency	Clear
Odor	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 HEARBAL 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.

**RESUEL T –**

The shampoo was formulated by admixing the equal amount of the aqueous extracts of all the ingredients with soapnut (Table 1). 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.



**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

**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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