



# Preparation and Formulation Of Herbal Antidandruff Shampoo

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## ABSTRACT

The purpose of this study is to create and assess shampoo from natural constituents for cosmetic use. Herbal antidandruff shampoo was created utilizing a variety of herbal ingredients, including Shikakai, Reetha, Neem, and Aloe-Veragel. The shampoo formulation was then tested for factors such as pH, Viscosity, foaming stability, and inspection satisfaction. The fungi *Malassezia restricta* and *M.globoso* are the primary source of the widespread ailment known as dandruff, which affects the scalp. In the current research, different anti-fungal compounds are used in hair care products to cure dandruff.

**Keyword:** Antidandruff shampoo, Herbal , Evaluation, Natural ingredients .

## INTRODUCTION

Herbal shampoo is most probably utilized herbal cosmetic which commonly used for cleaning hair and scalp in daily routine life. Now a days, Herbal plants and formulations are widely used for herbal cosmetics. Prepared Herbal shampoo is applied on wet scalp surface, massaging into hair, and cleansed by rinsing with water. Dandruff is also most commonly caused for Hair fall. It is necessary to remove from scalp. Main purpose of Herbal shampoo is to remove dandruff from hair scalp. Herbal formulations are most commonly used in development as well as developing countries as health care aid. (1-5)

The herbal shampoo is a type of cosmetic preparation that uses herbs that is natural ingredients from the plant (6). Any hair cleansing solution, made from the extracts of Ayurvedic herbs and flowers, can be termed as a 'herbal shampoo'. It can also be defined as a hair care product in form of viscous liquid used to remove dirt, oil from the hair and make them cleahai(7). The shampoo has abundant abilities like lubrication, conditioning, hair growth, reduction of hair loss, maintaining hair color, medication. It also has vital roles like anti-dandruff property, cleansing action, also acts as a keratolytic agent. The main aim of shampoo preparation is to clean dirt and dandruff, also used to make hairs soft and silky (8).The purpose of the present investigation is to avoid the use

of synthetic or chemical preparations that are available in the market. Several herbal ingredients with antidandruff properties were used, which makes hair soft and lustrous, promote hair growth(9). Importantly these preparations are cost effective, not much expensive

## **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. Pure and Organic Ingredient
8. Free from Side Effects
9. No Synthetic Additives
10. Earth And Skin Friendly
11. No Petroleum based Ingredients.

## **Function of shampoo**

1. Keep Healthy Natural Oils
2. It should effectively and completely remove dirt or soil.
3. It should effectively wash the hair.
4. It should produce a good amount of foam to satisfy the user.
5. It should be readily removed by rinsing with water.
6. It should impart a pleasant fragrance to the hair.
7. It should not have any side effects or causes irritation to the skin and eye.
8. Conditioning.(10)

## Objectives

- To compare the organisms isolated from the scalp with *Malassezia furfur* (MTCC no -1374)
- To check effect of individual component of shampoo the on growth of dandruff causing microorganisms
- Sub-culturing and maintenance of cultures of dandruff causing microorganisms
- To select herbs which are effective against dandruff
- To standardize extraction procedure for active ingredient of herbs
- To check the effect of herb extracts against *Malassezia furfur*
- Preparation of shampoo using effective herb(s)
- Determining shampoo's inhibitory effects on dandruff causing microorganisms
- Sample distribution and analysis of Feedback obtained
- Data Analysis and report writing

## PROBLEMS RELATED TO HAIR:

- Dandruff
- Dry hair
- Split ends
- Oily hair
- Frizzy hair
- Limp hair
- Hair loss
- Heat damage
- Color damage
- Grey hair

## Classification of dandruff

Depending upon the symptoms dandruff categorize-

- 1) Dry dandruff
- 2) Oily dandruff(11)

### 1) Dry dandruff

- A) It is also called pityriasis simplex characterize by excessive.
- B) Information on the minute scale which accumulates on the scale area.

### 2) Oily dandruff

- A) It is also called pityriasis steroids.
- B) It arrives on the scale with sebum production(11,12)

### Different Diseases Associated With Scalp Hair:

- ❖ Mycotic Conditions
- ❖ Dandruff
- ❖ Seborrheic dermatitis
- ❖ Tinea capitis
- ❖ Parasitic Infestation
- ❖ Pediculosis capitis
- ❖ Inflammatory Conditions
- ❖ Psoriasis

### Dandruff

Dandruff is a chronic scalp condition, which involves excessive shedding of dead skin cells from the scalp. It is caused by a fungus called *Malassezia restricta* and *Malassezia globosa*. *Malassezia* formerly called *Pityrosporum* is a yeast causing infection of skin and scalp.(13)Dandruff is caused due to excessive shedding of dead skin cells from the scalp. It affects 5% of the population and mostly occurs after puberty, between 20 and 30 years, and idandruff affects males more than females.(14) The skin of scalp renews itself about once a month. Usually, scalp sheds dead cells in nearly invisible way, but sometimes cell turnover becomes unusually rapid and dead cells are shed as visible flakes called dandruff. Warm and humid atmosphere, overcrowding, and poor personal hygiene promote the growth of *Malassezia*.(15)





## Causes of dandruff

One explanation for dandruff is that the fungus *Pityrosporum ovale*, which is naturally present on the scalp and other parts of the skin. Typically, this fungus causes no damage. However, with the weather changes, hormonal, and stress, the scalp will produce more oil, causing the fungus *P.ovale* to proliferate. With the proliferation of the fungus, itchiness of the scalp skin cells and also the loss of hair follicles and so-called dandruff will come. The exact mechanism of dandruff formation is now believed to be the result of the formation of enzymes called lipases. The *Malassezia* fungus break down sebum to oleic acid by using these enzymes. The oleic acid then penetrates the top layer of skin and causes increased skin cell turnover in susceptible people. This, in turn, causes dandruff flakes and sometimes itching and redness

## Symptoms of dandruff mainly include the following

- Presence of fragments (scaling)
- Itching of the scalp
- Redness around the scalp.(16)

The spectrum of dandruff is troublesome to define because it blurs with seborrheic dermatitis and few different scaly conditions.(17)

## Herbal anti-dandruff shampoos

Herbal anti-dandruff shampoos are the cosmetic formulations which contain herbal ingredients such as plant extracts and essential oil. These herbal shampoos are generally used to remove the dandruff, to add natural color to the hair, to remove the extra oil content of the hair, for the healthy growth of the hair, to remove the dust, dirt, and scales of the scalp, to prevent hair falling, to impart softness and smoothness to the hair shaft, etc. It is assumed that they can penetrate to the root shafts, stimulate the sebaceous glands, enhance the blood circulation and impart greater strength to the hair root and the shaft. They are also used against alopecia, thinning, clubbing, and graying of hair and hair shaft roughness and breaking. There are large numbers of plants which have beneficial effects on hair and are commonly used in shampoos (18)

## Ingredients of a Shampoo

The common ingredients of a shampoo are:

- Detergents
- Conditioners
- Thickeners
- Preservatives
- Fragrance

**Detergents:** Shampoo generally include artificial detergents or surfactants as cleansers. A detergent or surfactant is amphiphilic in nature, which means the detergent molecules includes both lipophilic and hydrophilic sites. The lipophilic sites assist to bind sebum, oily dust and hydrophilic end binds to water.

**Conditioners:** Hair conditioning features are to impart manageability, gloss and residues of hair. This may be included in the shampoo which then serves dual function of cleaning and conditioning.

**Thickeners:** These are introduced to alternate the physical and optical properties of the shampoo. Many shampoos are pearlescent. Thickeners like sodium chloride are used to grow the product viscosity. These does not show any effect on hair cleansing.

**Preservatives:** Preservatives withstand germs and save us from decomposition of the shampoos. They also prevent various other health risks that accompany infection through germs and bacteria. Conditioners

**Table no.1 Basic shampoo ingredients formulations and function(19)**

|                     |  |
|---------------------|--|
| Detergents          | Functions to remove environment dirt,styling products, sebum, and skin scales from the hair and scalp.   |
| Foaming Agent       | This agent allows the shampoo to form suds, as consumers equate cleansing with foaming even though the two are unrelated.                                    |
| Conditioners        | Leave the hair soft and smooth after sebum removal by the detergent.   |
| Thickeners          | Thicken the shampoo, as consumers feel that a thick shampoo works better than a thin shampoo   |
| Opacifiers          | Added to make a shampoo opaque aoposed to translucent for aesthetic purposes, unrelated to cleansing.  |
| Sequestering Agents | Functions to prevent soap scum forming on the hair and scalp in the presence of hard water; The basic difference between a liquid shampoo and a bar cleanser |
| Fragrance           | Added to give the shampoo a consumer-acceptable smell.   |
| Preservatives       | Prevent microbial and fungal contamination of the shampoo before and after opening.  |
| Specialty Additives | Treatment ingredients or marketing aids added to impart other benefits to the shampoo, besides hair and scalp cleansing.                                     |

## Amla



Amla, known as Indian gooseberry, is an ample source of vitamin C. It is full of many health benefits. Powdered Amla is used as an essential of hair tonics, required to enhance hair growth and improve hair pigmentation (20). It gives power to the roots, takes care of the colour, and improves luster. Amla oil application to the roots of hair improves hair growth and color . The very popular use is to decrease baldness and hair loss. This quality is due to the tannin contents as tannic acid, ellagic acid, gallic acid, iron and antioxidant material that freezes free radical damage to hair follicles, caused by dandruff (21).

- 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.



## Hibiscus

Hibiscus or ‘gudhal’ is the most beneficial ingredient for hair . It is used for the growth of hair, its regrowth, and hair loss. Hibiscus carries amino acids, Vitamin A, C and alpha hydroxyl acids along with other nutrients that are highly beneficial for hair and scalp. They keep scalp healthy and minimize the chances of dandruff from hair (22).

- 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.



## Shikakai

- 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.



### **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.



### **Rose Oil –**

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





## **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.



Research Through Innovation



## Soap Nut

Reetha shows cooling effects and acts as an excellent cleanser on the skin. Soapnuts prevent the scalp from drying and retain the softness of the skin. The mixture of soapnuts and chickpea when applied on the skin gives gentler effects on the skin. It makes skin soft and tender. It is also used in removing flakes of cells on the scalp (23).



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

## Bhringraj

Bhringraj or false daisy is a medicinal herb that promotes hair growth. It is a popular ayurvedic ingredient used for hair growth . It helps to empower blood circulation to the scalp by stimulating and triggering hair growth, which has been lost due to any cause, probably, dandruff, *etc*. It also prevents scalp problems, caused by dandruff and irritation, in order to make sure that hair growth remains unaffected (24).

i. Treats baldness and helps in growth of hairs.

ii. Makes Hair Lustrous



## Neem

Neem helps to clean the scalp. It clears the clogged pores and improves hair growth. The regenerative properties are extremely essential for the treatment of dandruff . It is endowed with antiseptic and healing properties and it can be used for a variety of hair problems (25) . Dandruff can be removed by using neem leaves as a rinse. The most common neem uses are in

our hair care rituals. As per Ayurveda, amla, reetha, neem, shikakai are herbs needed for healthy locks, enhanced hair growth, decrease hair fall and make the hair voluminous.



## GINGER

Ginger is a great hair conditioner, loaded with minerals and essential oils, making hair more manageable, softer and shinier (26). It acts as a utility relief for itchy scalp, dry and dandruff. It carries natural anti-inflammatory and antiseptic properties to keep scalp healthy and clean.



### Preparation Process

1. All the plant materials were collected from Ayurveda store.
2. All the ingredients were accurately weighed and soaked in water overnight individually.
3. Then the ingredients are boiled in the same water.
4. Later the mixture were cooled, filtered and collected.

5. Then thickening agents were added and the solution were gently stirred.
6. Later preservatives, coloring agents & Perfuming agents are added to the mixture and gently stirred.
7. Finally, shampoo were prepared and stored in a container

## **EVALUATION OF HERBAL SHAMPOO:** (27,28,29)

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 colour, clarity, odour, and froth content.

### **PH determination**

The pH of the prepared herbal shampoo in distilled water (10% v/v) was evaluated by means of pH analyser at room temperature. The pH balance of the product is important as it affects skin and surface on which there are used. The pH of our formulated shampoo falls with the ideal pH range of the shampoo i.e., (between 7 and 5). The pH of the shampoo also helps in minimizing irritation to the eyes enhances the qualities of hair and maintains ecological balance of scalp. The pH of the tested commercial shampoos was found within the preferred range

### **Determination of Solid % Shampoo**

About 4g of shampoo solution was placed in an evaporating dish. The liquid portion of the shampoo was evaporated by placing the dish on hotplate. Remaining solid content in the dish was calculated after complete drying. It was determined by using the formula:

$$\% \text{ of solid content} = \frac{C-A}{B-A} \times 100$$

Where;

A= weight of empty evaporating dish

B= weight of evaporating dish with shampoo solution

C= weight of evaporating dish after evaporation of shampoo solution.(30)



## 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.<sup>(31,32,33,34)</sup>

## Stability study:

All the formulated shampoo bars were taken and kept for stability study at room temperature (35°C) as well as refrigerator (4°C) over a period of Three months.

## Conclusion

The present study was carried out with the aim of preparing the herbal shampoo that reduces hair loss, strengthen the hair growth. Herbal shampoo was formulated with the aqueous extract of medicinal plants that are commonly used for cleansing hair traditionally. To provide the effective conditioning effects, the present study involves the use of Shikakai, Amla, and other plant extracts. We formulated an herbal shampoo by using plant extracts which are commonly used traditionally and lauded for their hair cleansing actions. At this time, Hair fall is the major problem so in this case we try to add some type of herbal drugs in the formulation to prevents hair fall, make smooth, as well as give anti-dandruff action. The formulation of herbal anti-dandruff shampoo are given positive effect and reduce dandruff and other type of fungal infection from hair. This type of formulation we use Shikakai and Amla herbal plant which contain anti-dandruff property. There are no any type of side effect, so they are useful for all of them. The formulation of Anti-dandruff hair shampoo provides a method for treating a scalp dandruff or seborrheic dermatitis.

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