



# A Comprehensive Review on: Herbal Anti Dandruff shampoo

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## Abstract:-

Dandruff is a common disorder affecting the scalp condition caused by yeast *Pityrosporum*. Dandruff cannot be completely eliminated but can only be managed and effectively controlled. The primary signs of dandruff are redness surrounding the scalp, itching of the scalp, and the presence of pieces. Two approaches exist for treating dandruff. These include of antidandruff shampoos with chemical bases and herbal bases that contain antifungal, antibacterial, and selenium sulphide, zinc pyrithione, and other antibacterial and antifungal substances. Among the hair care product categories, shampoo is one of the biggest segments. The majority of the substances in shampoos are chemicals, and because of the possibility of negative side effects, they have come under heavy criticism. This study aims to investigate the removal of hazardous synthetic components from anti-dandruff shampoo and their replacement with safe natural ones.

**KEYWORDS:** Herbal shampoo, Natural Ingredients, Hair, Dandruff, Cleansing action, Natural, Antidandruff shampoo, Evaluation.

## INTRODUCTION:-

Shampoo is undoubtedly the cosmetic product that we use on a regular basis to clean our hair and scalp. Traditionally used to cleanse the hair and scalp, herbal shampoos are classified as cosmetic preparations and contain ancient Ayurvedic herbs. Their primary purpose is to effortlessly eliminate oils, environmental contaminants, dandruff, dirt, and other debris while also nourishing your hair. Herbal shampoo substitutes synthetic shampoo that is sold in stores with plant-based herbs. The importance of herbal shampoo stems from two factors: people prefer it to chemical products these days since chemicals have negative consequences, and people need and are increasingly aware of natural ingredients in cosmetics [1, 2].

Because customers believe herbs are risk-free and have no unfavourable side effects, they are growing in popularity. It's advised to use herbal shampoo recipes instead of synthetic ones, but making cosmetics with entirely natural ingredients might be difficult. Shampoos are probably the cosmetics we use on a regular basis to clean our hair and scalps. Herbal shampoos are cosmetic products that clean the hair and scalp similarly to regular shampoo, but they are created with traditional ayurvedic herbs. Among other things, they are used to clear up dandruff, oils, grime, and environmental toxins. Herbal shampoo is a kind of cosmetic preparation that replaces synthetic shampoo sold in stores with plant-based herbs [3, 4].

The use of herbal shampoo is essential since natural products are preferred by current customers over synthetic ones due to research showing that they are healthier. The importance of cosmetics and public awareness of them.

Along with visual inspection and quality control tests, the evaluation of shampoos include physiochemical controls like as density, viscosity, and pH. NaCl Lauryl Sulphate Detergents with bases tend to be the most common; nevertheless, concentrations can vary greatly between brands even within a manufacturer's product line. A high detergent content may be seen in inexpensive shampoos. Except even high-end shampoos might only include traces of cheap detergent. The exact same detergent may be found in the same concentration in shampoos for oily and dry hair. The oily hair shampoo may have less oil or conditioning ingredient, or there can just be a variation in the packaging [6].

- Hairs are an essential component of human beauty.
- On the dermis or skin, hair grows from follicles and is made up of a protein filament.
- Hair is known scientifically as pili or pilus.
- Hair extends into the dermal layer, where it is located in the hair follicle, and is a part of the integumentary system.
- The existence of hair is a key characteristic that distinguishes mammals as a distinct class of species.
- It has a sensory function, protects from cold and UV radiation, and can have a significant psychological impact when its growth or structure is abnormal in humans. It is a prized and highly visible indicator of health, youth, and even class.
- The variation in each Hair's length, colour, diameter, and cross-sectional shape can be seen at the microscopic level.

#### **ADVANTAGES OF HERBAL SHAMPOO-**

- Pure and organic ingredients are used to make herbal shampoo, and there are no synthetic additives or surfactants.

Are without any negative consequences.

- Biodegradable and earth-friendly, herbal shampoos.
- The eyes are not irritated by it.
- It is reasonably priced and cost-friendly.
- Using herbal shampoo on a regular basis can do wonders for your hair.
- Using herbal hair results in the ideal oil balance.
- They contain a natural essential disinfectant that guards against skin infections and harsh UV radiation on the hair and scalp.

#### **DISADVANTAGES OF HERBAL SHAMPOO-**

- If you use dry shampoos excessively or regularly, a build-up of residue may result, giving your hair a coarse texture.

- Excessive use can also make the hair more brittle and dry it out by preventing natural oils from moisturising it.
- The residue left behind by dry shampoo can obstruct the pores on the scalp, which can lead to inflammation or breakouts the residue is scented, the aroma may irritate some scalps and serve as the ideal environment for the growth of dandruff.

### Functions of Shampoo -

1. To make the hair smooth and shiny.
2. Produce good amount of foam.
3. Should not cause irritant to scalp, skin and eye.
4. Should completely, effectively remove dirt.
5. Impart pleasant fragrance to hair.
6. It should effectively and completely remove dirt or soil.
7. It should effectively wash the hair.
8. It should produce a good amount of foam to satisfy the user.
9. It should be readily removed by rinsing with water.
10. It should impart a pleasant fragrance to the hair.
11. It should not have any side effects or causes irritation to the skin and eye.

### Ideal Characteristics of Shampoo –

- Should effectively wash hair.
- Should produce a good amount of foam.
- The shampoo should be easily removed by rinsing with water.
- Should leave the hair non-dry, soft, and lustrous with good, manageability.
- Should impart a pleasant fragrance to the hair.
- Should not make the hand rough and chapped.
- Should not have any side effects or irritate skin obeyed

### Need of Shampoo –

Sebum is an oily substance that helps to moisturise your skin and scalp. If you skip shampooing, sebum can build up quickly and cause your hair to become oilier than you would like. In addition to drawing micro fauna, sebum can cause dandruff and other hair-related issues. Shampooing is essential for getting rid of sebum and leftover hair product residue from your scalp. It is widely used in the market. Dry scalp can also result from regular washings. Shampoos with abrasive ingredients can cause flaking by removing oil from your scalp. Dry hair, damaged ends, and flaky skin can also be consequences of washing in too hot water. An issue with a dry scalp might manifest as redness, puffiness, and itching [5, 7].

### Types of Shampoo-

- Lotion Shampoo
- Cream Shampoo
- Jelly Shampoo
- Aerosol Shampoo
- Specialized Shampoo
- Conditioning Shampoo
- Anti-dandruff Shampoo
- Baby Shampoo
- Two Layer Shampoo
- Powder Shampoo
- Liquid Shampoo

**HAIR PHYSIOLOGY:**

At any particular time, the majority of the hair grows. Every hair goes through this phase for a few years. The hair follicle shrinks and hair development decreases over a few weeks during the catagen transitional period. Resting phase, or telogen: The capacity of the hair follicles to generate new hair stops over a few months, and the old hair falls out. When a new hair begins to develop, the old hair is pushed aside.

**PROBLEMS RELATED TO HAIR:**

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

**Dandruff –**

A fungus known as *Malassezia restricta* and *M. globosa* is thought to be the source of dandruff, which is the excessive shedding of dead skin cells from the scalp. One type of yeast that causes skin and scalp infections is *Malassezia*, which was originally known as *Pityrosporum* (Shuster, 1984). Noticable to the naked eye, the replacement of scalp cells happens gradually. This is a monthly process of change. The disruption on the scalp that we refer to as dandruff will occur if this process picks up speed. The perfect environment for *Malassezia* growth is one that is warm and humid, crowded, and devoid of personal hygiene (Rippon, 1982). A fifth of the population suffers from dandruff, which primarily affects men over women between the ages of 20 and 30 after puberty [8].

**Symptoms:**

1. Erythema, which is red patches on the skin of the scalp, and sometimes on the face
2. Eyebrow dandruff
3. Hair loss
4. Dry flakes on the skin of the face

**Causes of dandruff**

Naturally found on the scalp and other areas of the skin, *Pityrosporum ovale* (*P. ovale*) is one of the fungi that can cause dandruff. This fungus usually doesn't damage people. The fungus *P. Ovale* will multiply on the scalp due to increased oil production brought on by hormonal fluctuations, stress, and weather changes.

Dandruff is caused by the fungus growing faster than usual, which also causes skin cells on the scalp to itch and hair follicles to fall out. It is currently thought that the precise process of dandruff development is caused by the production of lipases, an enzyme. These enzymes are used by the fungus *Malassezia* to convert sebum into oleic acid. When oleic acid reaches the epidermis, it increases skin cell turnover in those who are vulnerable. This ultimately results in redness, irritation, and dandruff flakes.

- Dry skin.
- Irritated, oily skin.
- Not shampooing often enough
- Other skin conditions:
  1. Eczema



## 2. Psoriasis

- Seborrheic dermatitis Malassezia-yeast like fungus
- Sensitivity to hair products (contact dermatitis)

### TREATMENT:

- Follow a healthy diet.
- Avoid stress.
- Shampoo use a combination of special Ingredients to control dandruff.

### HERBAL SHAMPOO:

These are cosmetic products that use traditional ayurvedic herbs to clean the hair and scalp similarly to regular shampoo.

They work on removing oils, dandruff, and other materials from the environment. Herbal shampoos for hair growth work to fortify hair follicles by supplying necessary oils and nourishment to the hair's base and follicles. Consequently, this promotes hair growth and the development of new, healthy hair roots. Increasing your vitamin intake or using a medicated shampoo are common recommendations for treating dandruff. Numerous internet discussion boards and folk. Like many citrus fruits, lemons are rich in essential vitamins, antioxidants, and citric acid (a form of vitamin C).

This vitamin combination is supposed to support the health of the hair and enhance the immune system. Dandruff is frequently caused by the yeast-like fungus malassezia, which feeds on the oils on the scalp. Malassezia, like other naturally occurring fungi, often doesn't cause too much trouble unless it's present in significant quantities. Guru Nanak, the founder and first guru of Sikhism, mentioned soap and the soapberry tree in the sixteenth century.

#### Natural dandruff treatment believe lemons can:

- Provide vitamin C, citric acid, flavonoid, and iron — all nutrients essential to hair and skin health
- Balance the pH of the scalp to keep dandruff at bay
- Strengthen hair follicles
- Eliminate excess oils in the scalp that lead to build up and scalp flakes

### HERBAL ANTIDANDRUFF SHAMPOO:

Herbal dandruff shampoo does not contain any unsafe elements; unlike synthetic shampoo it is obtained naturally from organic ingredients and medicated specifically to treat dandruff problems. Herbal dandruff shampoo is safe for daily use and gives nutrients and other essential vitamins for your hair and scalp.

#### Advantages of Herbal Shampoo over Chemical Shampoo

Hundreds of shampoos claim to make one's tresses as those in fairy tales. Chemical shampoos might appear to be improving hair texture along the length but eventually end up damaging the roots and cause:[2, 3].

- Premature aging, graying of hair
- Scalp dryness and itchiness
- Split-Ends and Excessive hair loss

### Herbs used in the treatment of Dandruff

Herbal medications or their preparations offer a good substitute for synthetic medications. The usage of natural ingredients in cosmetics has skyrocketed in the last several decades. Natural botanicals can be utilised unprocessed or can be extracted, refined, or derivatized to make them more cosmetic-friendly. Many different plant active ingredients, such as vitamins, bioflavonoids, enzymes, fruit acids, hormones, phyto-hormones, sugars, glycosides, tannic acid, and essential oils, are thought to be beneficial in cosmetic formulations. The main reason for the demand for herbal cosmetics is the perception that these items are risk-free and unaffected by adverse effects [5].

**Henna (Lawsonia inermis)**

Henna is derived from plants in the Lawsonia inermis family of the Lythraceae, which also contain the colour molecule Lawsone, which, when processed, turns into henna powder. Due of henna's innate affinity for the proteins in human hair, the colour can be naturally "stain" onto the hair shaft.

**Neem (Azadirachta indica)**

Blood purifier and beauty enhancer qualities have been discovered in the herb Azadirachta indica, which belongs to the Meliaceae family. It is utilised for several therapeutic applications. It is useful as a skin cleanser and in treating other common cosmetic issues [2, 3-6].

**Tea Tree Oil (Melaleuca alternifolia)**

Melaleuca alternifolia, or tea tree oil, is a popular antiseptic among herbalists because it contains unique disinfection compounds that can reach the scalp's outer layers of skin, easing irritation and fostering a healthier scalp.

**Rosemary (Benincasa hipsida)**

Dandruff can be effectively treated with rosemary (Benincasa hipsida), a common herb. Several commercially available tonics, scalp care shampoos and lotions, and hair growth products contain it.

**Licorice (Glycyrrhiza glabra)**

Glycyrrhizin, which is found in licorice, has the ability to lessen the amount of oil secreted by the scalp. There's a notion that suggests limiting the oils in the scalp will lessen or even eliminate the symptoms of dandruff [12, 13-15].

**Lemon (Citrus limon)**

For dandruff and other skin issues, citrus—especially lemon—may be useful. It helps to restore the skin's pH balance and has a high vitamin C content. To make your hair silky and lustrous, try adding a few drops of lemon juice to an herbal shampoo.

**Eucalyptus (Eucalyptus globulus)**

Dandruff is also commonly treated with eucalyptus oil, another herbal remedy. To eliminate flakes and treat dandruff, a few drops of the oil can be combined with coconut oil and massaged into the scalp. Should be used one or two times a week to avoid developing new issues.

**Fenugreek (Trigonella foenum graecum)**

Another well-known herbal cure for dandruff. This plant's seeds are softened before being applied as a poultice to lessen dandruff [11-13].

**Formulation of shampoo**

| Sr. No | Ingredients    | Quantity | Category  |
|--------|----------------|----------|---|
| 1      | Lemon Juice    | 5ml      | Antidandruff , maintain pH, preservative        |
| 2      | SLS            | 25ml     | Foaming Agent, surfactant                       |
| 3      | Glycerine      | 5ml      | Moisturizer                                     |
| 4      | Orange juice   | 5ml      | Anti – Dandruff, Anti –Fungal, balance in scalp |
| 5      | Purified water | Q.S      | Vehicle, solvent                                |

## **Materials and methods Collection of plants:**

We collected orange and lemon fruits, as well as bits of SLS plants, from the local market. We bought glycerine and essential oils from a laboratory.

These were washed by running water to remove any contaminants. They are ground into a coarse powder, sun-dried, then sieved. The decoction process was used to make the extracts, which were then stored in containers with tight seals. Based on a measurement of the ink content in the foam, four grades were obtained: none, slight, medium, or heavy [10].

## **METHOD OF PREPARATION -**

### **1. Weighing:**

Using a computerised balance, each necessary herbal ingredient for the preparation of the shampoo was precisely weighed.

### **2. Mixing:**

For clear liquid shampoo, they are made through a straightforward mixing procedure. Combine all the ingredients and squeeze in some lemon juice for optimal transparency. Add essential oil after that for a pleasing scent. A stalagmometer was used to measure the surface tension of the shampoo that had been made in 10% w/v distilled water at room temperature.

### **3. Storage:**

Store in suitable container [7, 8].

## **Evaluation of herbal shampoos**

The following evaluation studies have been carried out for the formulated herbal based anti-dandruff shampoo for finding out its quality and efficacy.

### **Physical appearance/visual inspection**

The prepared shampoo formulations were evaluated for its clarity, foaming ability and fluidity.

### **pH of shampoo**

PH of prepared shampoo formulation was tested by preparing 10% shampoo solution in distilled water at a room temperature of 25°C. (Mainkar A.R et al 2000)

### **Percent of solids contents**

A clean dry evaporating dish was weighed and added 4 grams of shampoo to the evaporating dish. The dish and shampoo was weighed. The exact weight of the shampoo was calculated only and put the evaporating dish with shampoo was placed on the hot plate until the liquid portion was evaporated. The weight of the shampoo only (solids) after drying was calculated.

### **Rheological evaluations**

The viscosity of the shampoos was determined by using Brookfield Viscometer (Model DV-1 Plus, LV, USA) rotating at speeds of 0.3 to 10 rpm by using spindle T95.

### **Dirt dispersion**

Two drops of shampoo were taken in a large test tube containing 10 ml of distilled water and then add 1 drop of India ink; the test tube was stoppered and shakes it for ten times. The amount of ink in the foam was estimated as None, Light, Moderate, or Heavy.

### **Cleaning action (Sharma P.P et al 2002)**

To determine cleansing action of shampoo 5 grams of wool yarn were placed in grease, after that it was placed in 200 ml. of water containing 1 gram of shampoo in a flask. Temperature of water was maintained at 35°C then the flask was shaken for about 4 minutes at the rate of 50 times/ minute. The solution was removed and sample was taken out, dried and weighed [9].

The amount of grease removed was calculated by using the following equation:

$$DP= 100(1-T/C)$$

### **Detergency ability**

To evaluate the detergency ability of the samples the Thompson method is used. Hair was, washed with 5% sodium lauryl sulphate (SLS) solution, then dried and divided into 3g weight groups. The samples are suspended in n-hexane solution containing 10% artificial sebum and it was shaken for 15 minutes at room temperature. Then samples are removed, the solvent is evaporated at room temperature and their sebum content determined. In the next step, each sample is divided into two equal parts, one washed with 0.1 ml of the 10% test shampoo and the other considered as the negative control. After drying, the residual sebum on samples are extracted with 20 ml n-hexane and re-weighed. Finally, the percentage of detergency power was calculated using the following equation:

$$DP= 100(1-T/C)$$

**In which,**

DP is the percentage of detergency power,  
C is the weight of sebum in the control sample  
And T is the weight of sebum in the test sample.

### **Structure of the trial**

About 3cm in diameter sterilised glass Petri dishes were filled with 4 cc of selected agar medium. After being cultured for four days on SPF overlaid with olive oil, the various strains of *Malassezia* were injected into cold-sterilized olive oil and adjusted using a Neubauer chamber to an inoculation density of  $5 \times 10^3$  CFU/ $\mu$ l. To cover an area of around one square centimetre ( $1 \times 10^6$  CFU/cm<sup>2</sup>), two hundred microliters of this suspension were pipetted into the ready-made Petri plates [14,15].

### **Results –**

The present study states that to develop a stable and Effective herbal shampoo without synthetic Chemicals. The following prepared herbal shampoo Reduce dandruff, Reduces hair fall, promotes hair growth and acts as Antidandruff. Formulated herbal shampoo contains SLS (Synthetic chemical) but its percentage is less Compared to marketed synthetic shampoo. For Effective conditioning effects, the prepared formulation involves the use of lemon juice, Orange juice etc. instead of other Synthetic agents.

### **Conclusion:-**

The objective of the study was to develop a stable and functionally successful herbal shampoo without the use of synthetic substances, which are frequently employed to a higher amount in such formulations. Synthetic hair shampoo is known to irritate the cuticle of the hair, making it dry, dull, and brittle. Although 7.5% of the shampoo's composition contains synthetic chemicals, it is still less than the market's synthetic accessible shampoo (10–40%). Our shampoo passed tests with flying colours. Wetness period, speed, improved foaming ability, and cleaning action.



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