

# Formulation and Evaluation of Polyherbal Scalp Scrub

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**Abstract:- Scalp scrub is usually used to treat problems like dead skin cells, dandruff, and flakes, and also controls sebum imbalance which helps to regulate hair growth. This article contains how aloe vera juice, fenugreek granules, rice powder, neem extract, hibiscus dried powder, optiphen, and lemongrass oil are used in scalp scrub. The properties of natural ingredients play an important role in removing impurities from the scalp and help exfoliate the scalp, balance the sebum, and soften and moisturize the scalp.**

**Keywords:- Scalp Scrub, Exfoliate the Scalp, Balance the Sebum, Soften and Moisturize the Scalp.**

## I. INTRODUCTION

### A. Scalp Scrub

Scalp scrubs are just like body scrubs used to exfoliate hands and legs, scalp scrubs remove product buildup, dirt, excess oil, and dead skin which are gathered at the roots of the hair. The most important feature of this scalp scrub is it exfoliates the scalp. It is especially used to balance the sebum and helps soothe the scalp. Natural ingredients are better than synthetic materials because synthetic materials can cause side effects. However, few wastes of natural materials are thrown away because they are considered not to provide health benefits. Some of the waste of natural ingredients can provide benefits for health, especially to the scalp. It also provides a soothing effect, nourishment, and hair strength, and helps in hair growth. Natural remedies are more acceptable in the belief that they are safer with fewer side effects than synthetic formulations. Herbal formulations have a growing demand in the world market. The main advantage of herbal cosmetics is their non-toxic nature, and they reduce allergic reactions in the scalp.

### B. Scalp

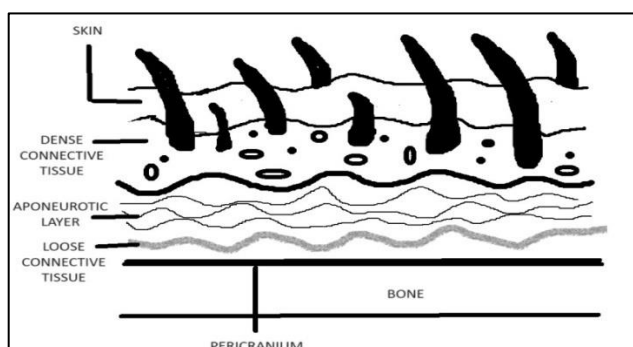


Fig 1: Anatomy of Scalp

- Scalp is the area of the head where head hair grows.
- The scalp is made up of the skin, connective tissue, aponeurosis, loose areolar connective tissue, and pericranium.
- The scalp is bordered by the face at the front, and by the neck at the sides and back.
- The scientific study of hair and scalp is called trichology.
- The scalp plays an important role in the aesthetics of the face.

### C. Types of Scalps

There are mainly four types of scalps:

- *Oily Scalp*
- *Dry Scalp*
- *Normal Scalp*
- *Combination Scalp*

#### ➤ *Oily Scalp*

An oily scalp is a greasy and unmanageable hair. The natural oil or sebum the scalp produces keeps hair lubricated, shiny, and smooth. However, sometimes the scalp can produce too much sebum, resulting in an oily scalp. The excess oil can lead to an itchy and flaky scalp, making the hair look limp and greasy. It can also cause clogged pores, leading to scalp acne and dandruff. Genetics, hormonal imbalances, stress, and diet contribute to an oily scalp.

#### ➤ *Dry Scalp*

A dry scalp is a common condition that can cause discomfort. It occurs when the scalp loses its natural oils, making it prone to irritation and itching. Several factors, such as harsh hair products, extreme climatic conditions, and hormonal imbalances, can cause a dry scalp. The symptoms of a dry scalp include dandruff, hair fall, and a flaky scalp. A dry scalp can be easily treated a dry scalp with scalp exfoliation.

#### ➤ *Normal Scalp*

A normal scalp has the right amount of natural oil and an ideal pH level, thus maintaining a healthy scalp and hair. The hairs are healthy, shiny, and easy to manage. They may still experience minor issues like dandruff or an itchy scalp, but they are usually easily manageable.

#### ➤ *Combination Scalp*

A combination scalp is a mix of both oily and dry scalp types. This means some areas of the scalp may be oily while others are dry. A combination scalp is similar to a

combination facial skin. The hair near the scalp is oily, while the ends of the hair may be dry and brittle. It can be challenging to manage a combination scalp, but it is possible to achieve healthy and balanced hair with proper care. Using gentle and nourishing hair products can help regulate the oil production on the scalp while providing moisture to the dry ends.

**D. Scalp-Related Problems**

➤ *Dandruff*

- Dandruff is a skin condition that mainly affects the scalp. Symptoms include flaking and sometimes mild itchiness.
- A more severe form of the condition, which includes inflammation of the skin, is known as seborrheic dermatitis.
- The cause is unclear but believed to involve several genetic and environmental factors.
- As the skin layers continually replace themselves, cells are pushed outward where they die and flake off.
- Usually, these flakes of skin are too small to be visible. However, certain conditions cause cell turnover to be unusually rapid, especially in the scalp.
- The result is that dead skin cells are shed in large, oily clumps, which appear as white or grayish flakes on the scalp, skin, and clothes.

➤ *Head Lice Infestation*

- It is also known as **pediculosis capitis**, which is the infection of the head hair and scalp by the head louse (*Pediculus humanus capitis*). Itching from lice bites is common.
- Head lice are spread by direct contact with the hair of someone who is infected.
- The cause of head lice infestations in children is not related to cleanliness. Other animals, such as cats and dogs, do not play a role in transmission.
- Head lice feed only on human blood and are only able to survive on human head hair. When adults, they are about 2 to 3 mm long.

➤ *Seborrheic Dermatitis*

- It is a long-term skin disorder.
- Symptoms include flaky, scaly, greasy, and occasionally itchy and inflamed skin.
- Areas of the skin rich in oil-producing glands are often affected including the scalp, face, and chest.
- Seborrheic dermatitis of the scalp may be described in lay terms as dandruff due to the dry, flaky character of the skin.
- However, as dandruff may refer to any dryness or scaling of the scalp, not all dandruff is seborrheic dermatitis.
- Seborrheic dermatitis is sometimes inaccurately referred to as seborrhoe

**II. INGREDIENTS USED IN FORMULATION**

*A. Ingredients and its Benefits*

Table 1: Ingredients with its Benefits

| Sr no. | Ingredients       | Benefits of Ingredients                                                                                                              |
|--------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| 1.     | Aloe vera extract | Promotes hair growth<br>Reduce dandruff<br>Strengthens hair<br>Reduce itchy scalp<br>Reduce hair loss                                |
| 2.     | Fenugreek         | Stimulate hair growth<br>Nourishes hair follicle<br>Increase blood circulation<br>Remove dead skin                                   |
| 3.     | Hibiscus powder   | Conditioners hair<br>Prevent scalp buildup<br>Protects from damage<br>Prevents breakage of hair<br>Prevent premature greying of hair |
| 4.     | Neem extract      | Reduce hair loss<br>Increase speed of hair growth<br>Prevents premature greying of hair<br>Controls sebum                            |
| 5.     | Optiphen          | Used as a preservative                                                                                                               |
| 6.     | Lemon grass oil   | Control dandruff and aromaticity                                                                                                     |

### B. Tests Performed During Formulation

Table 2: Tests Performed for Formulation

| Ingredients        | Test 1 | Test 2 | Test 3 | Test 4 |
|--------------------|--------|--------|--------|--------|
| Aloe vera extract  | 5 ml   | 5 ml   | 10 ml  | 10 ml  |
| Fenugreek granules | 2 g    | 1 g    | 1.5 g  | 2 g    |
| Rice granules      | 2 g    | 1 g    | 1.5 g  | -      |
| Hibiscus powder    | 2 g    | 1 g    | 1.5 g  | 2 g    |
| Neem extract       | 10 ml  | 15 ml  | 20 ml  | 22 ml  |
| Optiphen           | 0.5 ml | 1 ml   | 1.5 ml | 2 ml   |
| Lemon grass oil    | -      | -      | 1.5 ml | 2 ml   |

### III. METHODS USED IN FORMULATION

#### A. Formula 1: (Test 1)

Raw aloe vera gel was extracted and washed, then after fenugreek and rice granules were grinded into smaller granules, the hibiscus was collected and dried in the sun for 2-3 days and was powdered, the leaves of neem were kept in water in a beaker and that beaker was kept in a water bath for 15-20 minutes till water colour changes and was then filtered. The filtrate was taken, mixed with aloe vera extract and fenugreek granules, rice granules, and hibiscus powder were added to the mixture with continuous stirring and optiphen was added as a preservative.

#### B. Formula 2: (Test 2, 3)

It was observed that the outcome was not obtained as desired so the same procedure was done like **Formula 1** but instead, the aloe vera was blended into a mixer first.

#### C. Formula 3: (Test 4)

It was observed that there was growth of microbial so the rice granules were removed and the same procedure was followed as **Formula 2**.

### IV. EVALUATION OF PRODUCT

#### A. Organoleptic Properties

- Organoleptic properties colour and consistency were observed visually and it was found to be **reddish brown** in colour, **paste-like** consistency, and **aromatic** by olfactory observation.

#### B. pH test

The pH was measured with a digital pH meter and it was found to be **6.06**.

#### C. Spreadability Test

2 grams of formulated sample was taken and placed on a petri dish, another petri plate was then kept on the sample, and a 10-gram weight was placed. After 5 minutes the diameter was observed and it was found to be **5 cm**.

$$S = m * l / t$$

Where,

S = Spreadability

m = Weight kept on a Petri plate

l = Length budge on glass

t = Time taken

$$S = 10 * 2.5 / 5$$

$$= 10 * 0.5$$

$$= 5 \text{ cm}$$

#### D. Irritancy Test

A small amount of scalp scrub was applied and kept for 5 minutes and **irritancy was not observed**.

#### E. Washability Test:

A small quantity of scrub was applied over the hair and scalp, and after 20- 30 minutes should be washed with water it was observed that the scrub was **easily removed** by washing it with water.

### V. RESULTS

Table 3: Tests

| Tests         | Test 1          | Test 2          | Test 3            | Test 4          |
|---------------|-----------------|-----------------|-------------------|-----------------|
| Colour        | Light red       | Red             | Reddish brown     | Reddish brown   |
| Odour         | Pungent         | Pungent         | Slightly aromatic | Aromatic        |
| Consistency   | Coarse texture  | Paste like      | Paste like        | Paste like      |
| pH            | -               | -               | 6.03              | 6.06            |
| Spreadability | -               | -               | 4.8 cm            | 5 cm            |
| Irritancy     | Non irritant    | Non irritant    | Non irritant      | Non irritant    |
| Washability   | Easily washable | Easily washable | Easily washable   | Easily washable |

## VI. CONCLUSION

On observation from all the tests and results it was concluded that the presence of rice causes growth of fungus which is not acceptable and hence when rice was not used in formulation it gave the desired outcomes. On applying this scalp scrub, there was a gradual decrement in dandruff and it also didn't cause any irritancy effect on sensitive skin, it also makes the hair smooth and no hair loss was observed.

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