

# Antidandruff Hair Herbal Gel for Dandruff-Free Hairs

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**Abstract**—Dandruff is a common scalp condition characterized by flaking and itching, often resulting from fungal infections, dry scalp, or seborrheic dermatitis. Conventional treatments, while effective, may cause side effects or scalp irritation upon prolonged use. This study focuses on the formulation and evaluation of a herbal hair gel incorporating natural ingredients known for their antifungal, antibacterial, and moisturizing properties, aiming to offer a safe and effective alternative for dandruff control. The gel is prepared using herbal extracts. The formulation was assessed for its physicochemical properties, antimicrobial activity, and user acceptability. Results demonstrated promising antidandruff efficacy with minimal irritation, good stability, and ease of application. This herbal gel presents a holistic and sustainable solution for managing dandruff, promoting scalp health without the adverse effects associated with synthetic products. The pursuit of a natural solution for dandruff has led to the development of an innovative antidandruff hair herbal gel, designed to provide a gentle yet effective remedy for dandruff-prone hair. This herbal gel combines the therapeutic properties of traditional herbs known for their antifungal and anti-inflammatory qualities. Ingredients such as neem, tea tree oil, aloe vera, and rosemary work synergistically to soothe the scalp, reduce flakiness, and inhibit the growth of dandruff-causing microorganisms. Unlike chemical-based treatments, this herbal gel is free from harsh additives, making it suitable for sensitive scalps and promoting overall hair health. Regular use of the gel not only targets dandruff but also nourishes the hair follicles, leading to stronger, shinier, and more resilient hair. By harnessing the power of nature, this anti-dandruff hair herbal gel offers a sustainable and holistic approach to maintaining a healthy, dandruff-free scalp and vibrant hair.

protection appendages on the body & considered an accessory addition on the skin together with oil glands, sweat glands & mail. Conditioners that add shine to the hair and make it straight. Hair is simple in structure made of the root and shaft. The root is enclosed in the hair follicle, submerges into the skin in inclination, and ends down to the bulb; while the hair shaft is the part of the hair seen above the skin. Hair is made up of a tough protein called keratin that decides the strength of hair. The hair structure is made up of different layers and structures. Usually, hair consists of two parts: Follicle and shaft. The hair follicle is the center of biological activity like hair growth and pigmentation; whereas the hair shaft is considered to be dead and is mainly made of protein. Hair is a protein filament that grows from follicles found in the dermis. Hair is one of the defining characteristics of mammals. The human body, apart from areas of glabrous skin, is covered in follicles that produce thick terminal and fine vellus hair. Dandruff is a common scalp condition in which small pieces of dry skin flake off of the scalp. If you have dark hair or you're wearing dark colors, you may notice the flakes in your hair or on your shoulders. Dandruff may also make your scalp itch. Dandruff is a common condition that causes the skin on the scalp to flake. It isn't contagious or serious. But it can be embarrassing and difficult to treat. Mild dandruff can be treated with a gentle daily shampoo. If that doesn't work, a medicated shampoo may help. Symptoms may return later. Dandruff is a mild form of seborrheic dermatitis.

**Index Terms**—Antidandruff Hair, Herbal Gel

## I. INTRODUCTION

Hair is one amongst the vital part of the body derived from the ectoderm of the skin & its

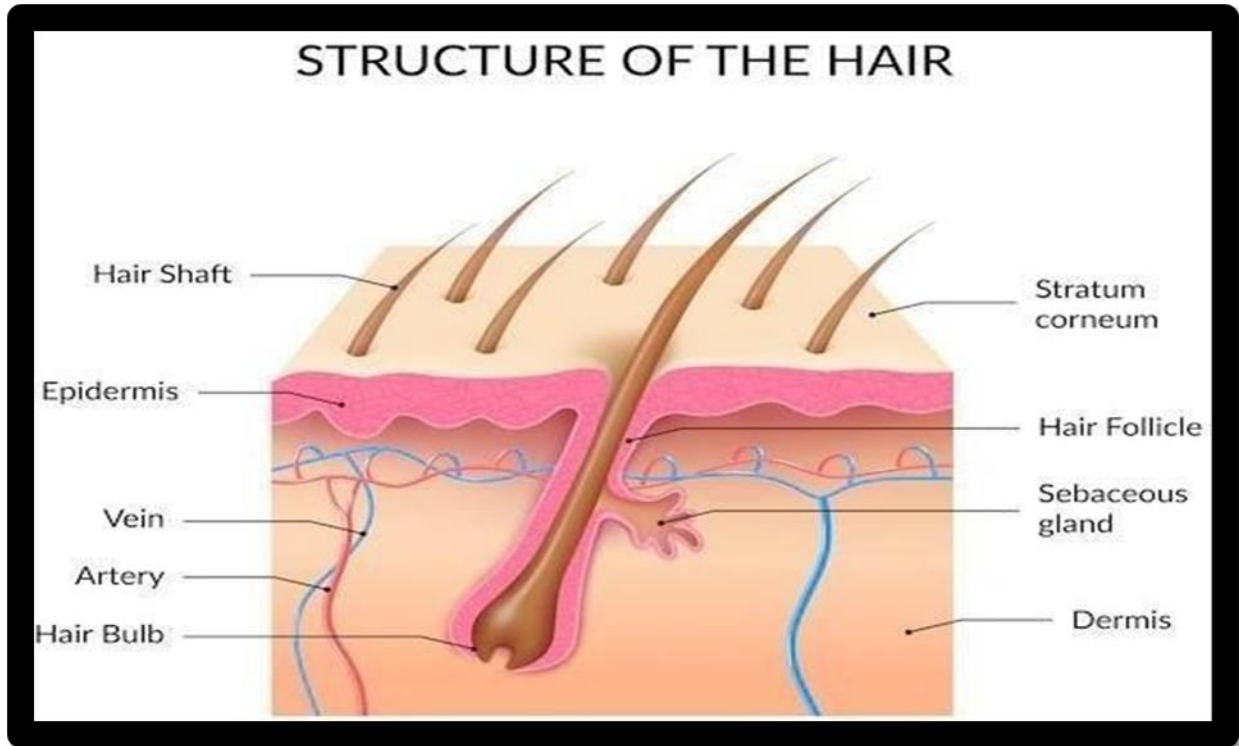


Fig no 1: Structure of Hair

- Symptoms
  - Skin flakes on your scalp, hair, eyebrows, beard, and shoulders
  - Itchy scalp
  - Scaly, crusty scalp in infants with cradle cap

- Causes:
  - Irritated, oily skin
  - Dry skin
  - A yeast-like fungus (malassezia) that feeds on oils on the scalps of most adults
  - Sensitivity to hair care products (contact dermatitis)
  - Other skin conditions, such as psoriasis and eczema

#### ➤ Risk factors

Almost anyone can have dandruff, but certain factors can make you more susceptible:

- Age. Dandruff usually begins in young adulthood and continues through middle age. That doesn't mean older adults don't get dandruff. For some people, the problem can be lifelong.
- Being male. Dandruff is more prevalent in males than in females.

- Certain illnesses. Parkinson's disease and other diseases that affect the nervous system also seem to increase risk of dandruff. So does having HIV or a weakened immune system.
- Dandruff can have several negative effects on hair. It often leads to an itchy, flaky scalp, which can cause discomfort and irritation. The scratching associated with dandruff can damage hair follicles, leading to hair breakage and thinning. Additionally, the presence of dandruff can create an unhealthy scalp environment, potentially impeding hair growth and resulting in dull, lifeless hair.

## II. LITERATURE REVIEW

1. D. Manjula<sup>1</sup>, J. Josephine Leno Jenita, KB. Premakumari and Shanaz Banu 2018 flaxseed is full of fatty acids and anti-oxidants which help to remove toxins and dead cells from the scalp. The evaluation of all the formulations were done on various parameters like physical appearance, pH, viscosity, spreadability, extrudability, homogeneity, grittiness, and stability.
2. Gaikward Saurabh Dilip, Thorat Swapnil Amrut

2022

Antimicrobial activity shows that formulation of gel shows higher efficacy without any dermal irritancy. More the optimized formulation showed no signs of irritation or inflammation. The formulation of Flaxseed hair gel provides a good base for treating the scalp and strengthen the hair thereby preventing hair fall.

3. *Isam A. Mohamed Ahmed, Alaa El-Din A. Bekhit*  
2018

Currently, the search for alternative proteins is very active due to forecasted future protein shortage. To be prepared for this predicted protein need, researchers have been developing expensive and in many cases technologies unaffordable to many developing countries (e.g. in vitro meat and single cell protein), while cheaper and already available rich sources of proteins, such as oilseed cakes, have been considered less important. Flaxseed press cakes are a very high source of protein.

4. *Ashiya Chaugule, Suyash Zinjad, Rahul Lokhande*  
2022

The flaxseed hair gel formulations provide a tremendous result in the treatment of the scalp and strengthen the hair thereby inhibiting hair loss. Flaxseed hair gel also prevents the hair from dandruff. Flaxseed also acts as an Anti-dandruff agent and involved in to reduce the generation of dandruff flakes. Flaxseed hair gel is prepared by a simple boiling procedure, so it is less expensive and easy to handle.

5. *Alina Mary, Elizabeth John, 2022*

work was to formulate and evaluate herbal hair gel containing Aloe vera and flax seed for hair growth potential and antidandruff activity. Flax seed (*Linum usitatissimum*) contains vitamin E which improves hair growth and result in stronger follicles. Flax seed and Aloe vera extracts were prepared by aqueous extraction. Five different types of gel formulations containing varying concentration of Flax seed and Aloe vera extracts were prepared and evaluated. The formulations were evaluated for various parameters like colour, odour, gel texture, clarity, pH, viscosity, spread ability, extrudability, gel strength, homogeneity, stability studies and in vitro antifungal activity. The overall results of this study support that herbal hair gel prepared using Aloe vera and Flax seed could be used for hair growth and reduction of dandruff.

Drug profile:

#### 1) FLAXSEED



Fig No.2: plant of Flax-seed

- Common names: Flax seed, linseed, Alsi or tees
- Botanical Name: *Linum usitatissimum*
- Kingdom: Plantae
- Subkingdom: Viridiplantae
- Division: Magnoliophyta
- Class: Magnoliopsida
- Order: Malpighiales
- Family: Linaceae
- Genus: *Linum*
- Species: *Lusitatissimum*
- Part use: Seed

#### ○ Chemical Constituents:

Flaxseed accumulates many biologically active compounds. and elements including linolenic acid, linoleic acid, lignans, cyclic peptides, polysaccharides, alkaloids, cyanogenic glycosides, and cadmium

#### ○ Uses

- Flaxseed is commonly used as a dietary supplement due to its high omega-3 fatty acids.
- It helps in lowering cholesterol levels, and promoting heart health.
- Flaxseed is known for its anti-inflammatory properties, beneficial in managing arthritis.
- It aids in digestion due to its high fiber content.
- Flaxseed can help in weight management by promoting a feeling of fullness.

#### 2) NEEM



Fig No 3: Neem

- o Common names: Neem or Indian Lilac in English, kadu-limba in Marathi Neem .
- o Botanical name: Azadirachta indica
- o Kingdom: Plantae
- o Subkingdom: Tracheobionta
- o Division: Magnoliophyta
- o Class: Magnoliopsida
- o Order: Sapindales
- o Family: Meliaceae
- o Genus: azadirachta Juss.
- o Species: Azadirachta indica
- o Part of use: Neem leaves
- o Chemical Constituent:

Neem leaf and its constituents have been demonstrated to exhibit immunomodulatory, anti- inflammatory, antihyperglycaemic, antiulcer, antimalarial, antifungal, antibacterial, antiviral, antioxidant, antimutagenic and anticarcinogenic properties. This review summary the wide range of pharmacological activities of neem leaf.

#### Uses:

1. Neem has properties is an effective herb to treat hair loss.
2. It has antifungal properties that may help within the treatment of dandruff.
3. The regenerative properties of neem help in reducing hair fall.
4. It helps the hair follicles to become stronger and also encourages hair growth.
5. Its medicinal properties is an effective herb to treat hair loss.

#### 3) ORANGE OIL:



figure no. 4: orange oil

- The orange oil effectively treats dry irritated scalps and eliminates dandruff.
- The essential vitamins in orange oil provide deep nourishment to your hair follicles making them thick and strong.
- It is prevented from turning rough, dull, and brittle hair strands.

#### METHODOLOGY - (MATERIAL & METHODS)

##### 1. Collection and authentication of plant materials:

The herbal hair gel was prepared by collecting and using various plant materials these are, Flax-  
The details of the plant materials study are given in following table

Sr. no	Herbs	Medicinal uses
1	Flax-seed.	Great for Hair Growth
2	Neem	ndition your scalp, Treat hair loss.

Table 1- Materials

#### III. METHODS AND PREPARATION

##### Formulation of herbal hair gel.

- o Collection of herbs required for hair gel preparation.
- o Herbs are as follows
- o Quantity is taken as given in table:

Sr. no.	Ingredients	Quantity
1	Flaxseed	50g
2	Neem	3 to 4 leaves
3	Water	300ml
4	Orange Oil	6 drops

Table 2 - Ingredients



➤ FORMULATION AND PROCEDURE:

- Formulation
- 2. Procedure

Step 1: - Herbs were collected & washed properly

➤ Procedure



- Step2:- Flax-seed boil with water. Boil for 25 min.



- Step3:-Neem boil with water & Filter with filter paper. Boil for 25 min.



- Step 4: - The filter material was collected in beaker and poured in container. Stay to settle down solution for 15 to 20 min.

- Step 5: - Add Orange Oil



□ STANDARDIZATION AND EVALUATION OF GEL :

The formulated hair gel was expected to be examined for parameters like Organoleptic Parameters, pH, Acid value, Viscosity.

1. Organoleptic Characteristics: In these tests prepared formulation was proposed to be evaluated for sensory tests like aroma, color, flavor etc.
2. pH: The pH of hair gel was to be determined by using pH meter.
3. Viscosity: It is an index of the resistance of liquid to flow, higher the viscosity of a liquid, the greater is the resistance to flow. The viscosity was determined by using Ostwald's viscometer.

flaxseed is full of fatty acids and anti-oxidants which help to remove toxins and dead cells from the scalp. The evaluation of all the formulations was done on various parameters like physical appearance, pH, viscosity, spreadibility, extrudability, homogeneity, grittiness and stability.

#### IV. RESULT & DISCUSSIONS

Herbal hair gel is one of the most useful hair

treatments. Herbal hair Gel not only moisturizes scalp but also, there by preventing the Anti-Bacterial & Anti-Fungal activity. The herbal hair Gel was prepared from various herbs like neem, Flax-seed etc.

The evaluation of the formulations was done on various parameters like physical appearance, pH, homogeneity, viscosity, spread ability, extrudability, and stability, In vitro evaluation study. The evaluation results show that the flaxseed hair gel is compatible for

hair and it having less side effects and these parameters show results in standard range. Hence, there is a further opportunity for pharmacological studies.

Organoleptic characteristic: Our formulated hair gel was transparent in nature. It has good odour given by fragrance add in gel. The gel has good spreading ability.

Sr. no.	Parameter	Inference
1	Sensitivity test	No sensation
2	Irritation test	No irritation
3	Grittest test	smooth
4	Ph.	4.5

Table no.3 - Evaluation parameter

## V. CONCLUSION

The formulation of Flaxseed hair gel provides a good base for treating the scalp and strengthens the hair thereby preventing the Anti-Bacterial & Anti-Fungal. There is a further scope for pharmacological studies. The formulation of Flaxseed hair gel provides a good base for treating the scalp and strengthens the hair thereby preventing hair fall. Flaxseed hair gel also prevents the hair from dandruff. Flaxseed also acts as an Anti-dandruff agent and involved in to reduce the generation of dandruff flakes. Flaxseed hair gel is prepared by simple boiling procedure, so it is less in cost and easy to handle. In flaxseed hair gel the aloe vera gel is also incorporated so it results in elimination of dandruff from scalp and protective for hair and provides healthy growth. The evaluation of the formulations was done on various parameters like physical appearance, pH, homogeneity, viscosity, spread ability, extrudability, and stability, In vitro evaluation study. The evaluation results shows that the flaxseed hair gel is compatible for hair and it having less side effects and these parameters show results in the standard range. Hence, there is a further opportunity for pharmacological studies.

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