



**INTERNATIONAL JOURNAL OF  
PHARMACEUTICAL SCIENCES**  
[ISSN: 0975-4725; CODEN(USA): IJPS00]  
Journal Homepage: <https://www.ijpsjournal.com>



## Research Article

# Optimization and Analysis of Herbal Infused Hair Oil Formulation for Enhance Hair Growth Activity

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### ARTICLE INFO

Received: 03 July 2024

Accepted: 11 July 2024

Published: 22 July 2024

#### Keywords:

Polyherbal Hair Oil, Herbal Components, Herbs.

#### DOI:

10.5281/zenodo.12793038

### ABSTRACT

Herbal hair oil are hair care Components implemented to the hair for the treatment of hair disorders. Herbal hair oil is a critical part of natural Cosmetics. This review article involves the objectives of herbal hair oil, which includes herbal goodness of hair, manage Frizzy hair, fight towards hair fall, etc. This emphasizes on the commonly used ingredients in the formulation of herbal Hair oil which involves coconut oil,,almond oil.

### INTRODUCTION

The hair on our bodies has a particular structure and is divided into thin and thick hair. Thin hair, also called lanugo, is located on all skin surfaces except for the palms of the hands and the soles of the feet. Thick hair, also called terminal hair, is dark and located only in some areas such as the scalp, the armpits, the pubic area, and the beard area in the case of men. Hair is located in the hair follicle, a particular skin structure with a sac-like form, tilted by approximately 75° concerning the skin's surface. The lower part of the hair follicle is located in the deeper part of the dermis but its depth level varies from hair to hair (in the case of

hair on the head, the average depth is around 0.6 - 1 cm). Hair oil is oil applied to the hair as a cosmetic, conditioner, styling aid, restorative, or tonic. Hair oils have been used for many different purposes such as hair growth, health, dryness, scalp, or fixing damaged hair. Various forms of hair oils can be applied such as natural hair oils which include traditional hair oils like coconut, castor, or almond oil Humans produce natural hair oil called sebum from glands around each follicle. Other mammals produce similar oils such as lanolin. When hair oils are first applied onto the scalp, the effect of the oil on the lipid

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



barriers varies depending on the type of oil. Hair oils have huge benefits due to the effect that it has on the scalp. When oil is first applied, the oil forms a protective hydrophobic film that decreases trans-epidermal water loss as it reduces evaporation from water from the skin. The reduction of water loss is important to the scalp because it helps reduce fatigue such as swelling and dryness. Further so, hair oils fill up any gaps between the cuticle cells which prevents the penetration of any damaging substances in the hair follicle. Mineral and vegetable oils are used to make a variety of commercial and traditional hair oils. Coconut oil is a common ingredient and brands which use this include Parachute. Natural hair oils of Almond, Sesame, Olive, Grape seed, Jojoba, Coconut, and Argan are considered supreme oils, best suitable for healthy hair growth. They can be applied directly on the hair as well as the skin. Even essential oils consisting of Lavender and Lemongrass have numerous qualities that help nourish and strengthen the hair. These are the best hair oils that not only bestow an amazing fragrance but also contain enriching properties that benefit your hair to a great extent. Coconut oil is a commonly used oil in hair products and just by itself. Coconut oil was found to have properties that reduce protein loss in hair when used before and after washing. Coconut oil is known to have lauric acid, which is a type of fatty acid that allows it to penetrate within the hair follicles and therefore heal and repair hair that is damaged. Aside from this, coconut oil is also widely known for moisturizing hair to avoid breakage. There are many varieties of coconut oil that include refined, unrefined, and extra-virgin. It works by repairing brittle hair, and prevents split ends those with slower hair growth can use it to enhance the rate of hair growth. We have used different herbal drugs and these Formulation are showing anti-hairfall property with Some of other beneficial activities like

- Anti-dandruff Activity
- Improves blood circulation to the scalp and Roots,
- Reduce hair pigmentation,
- Anti-fungal activity,
- Reducing the whitening of the hair
- Anti-hairfall property
- Hair growth activity

**Polyherbal** hair oil using various herbal components such as

- *Hibiscus flower (Hibiscus Rosa Sinesis )*
- *Alovera (aloe Barbadensis leaf)*
- *curry leaves (murraya Koenigii)*
- *amla (Indian gooseberry)*
- *Neem (Azadirachta Indica)*
- *Drumstick (moringa oleifera)*
- *Coconut oil (crocus nucifera)*
- *Lemongrass (Cymbopogon citratus)*
- *Tulsi leaves (oscimum sanctum)*

Herbs & herbal drugs are clinically proved good for hair growth. Hair loss problem is of great concern to both males & females & the main problems associated with hair loss are hair fading, dandruff & falling of hair. Various synthetic medicines are available for hair loss which does not treat permanently & also shows severe side effects. The main objective of this work is to develop such an herbal hair oil formulation which can resolve the problem related to hair fall & other hair diseases. Herbs drugs like Aloe vera pulp, Tulsi, hibiscus, shikakai, onion, Fenugreek seeds (methi curb), coconut oil, Almond oil, Jasmine flowers were selected for the formulations of poly herbal hair oil. The hair oil was prepared. Herbal preparations always have less or no side effects compared to synthetic preparations. Pharmaceutical factories are used to manufacture and produce countless medicines. In addition, herbs are used to beautify the body in the preparation of cosmetics, flavors and dyes. The purpose of this review is to study the parameters



regarding Formulation of herbal hair oil, using scientific research to make herbal hair oils using herbal ingredients like amla, hibiscus, curry. leaves, coconut oil. Based on the above observation, a crude herbal mixture was prepared in the form of herbal hair oil using the boiling method. The preparation has anti-hair loss and other useful properties such as anti-dandruff effect, improves blood circulation of the scalp and roots, reduces hair pigmentation, anti-fungal effect, reduces hair greying. The formulated vegetable oil was evaluated and parameters such as acid content, viscosity, saponification value pH, skin irritation etc. were determined and described in this paper.

**Aim -**

**Optimization and Analysis of herbal infused hair oil formulation for enhance hair growth efficacy**

**Objective-**

The Polyherbal hair oil formulated can satisfy all the required conditions to keep the hair moisturized, strengthen the hair and prevent dandruff caused by bacteria. The prepared Polyherbal hair oil was evaluated for pH, specific gravity, viscosity, irritation, grittiness, acid value, and saponification value Regular oiling may prevent hair from the damage caused by pollution and chemicals present in shampoo. It may also increase moisture, luster, and shine, and possibly preventing hair loss.

- 1) Understanding the various hair care practices followed by Indian women, for their scalp and roots, with specific focus on oiling and massage
- 2) Understanding consumer perceptions about the contribution of the scalp and the roots to hair health and beauty and the role of hair oil therein

**Review of literature-** In Ayurveda there are number of plants which are used for medicinal purpose due to different Phytoconstituents

Here number of drugs which having different Phytoconstituents-

**Morphology**

**Tulsi**



**synonym-** Holy Basil

**Botanical Name -***osimum sanctum/ Tenuiflorum*

**Kingdom -** *plantae*

**Order-** *Lamiales*

**Family-** *lamiaceae*

**Genus –** *Oscimum*

**Species-** *O. Tenuiflorum*

**Biological source-** Tulsi consists of the fresh and dried leaves of *Oscimum* species like *Oscimum sanctum* L. and *Oscimum basilic*L1. etc.

**Photochemistry-**

**Chemical constituents-**

linalol, eugenol, methylchavicol, methylcinnamat, linolen, ocimene, pinene, cineol, anethol, estragol, thymol, citral, and camphor.

The main chemical constituents of Tulsi are: Oleanolic acid, Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, Linalool, and  $\beta$ -caryophyllene.

- Carconic acid

Carconic carries Antiinflammatory and antioxidant properties, that can help rejuvenate damage nerve and tissue in your body. Applying of carconic acid at your scalp creates environment where your hair can thrive.

- Eugenol

Eugenol has been found to promote the proliferation of hair follicle cells, which in turn

stimulates hair growth. This can encourage the growth of healthy hair and repair damaged hair follicles.

Here's why you need to start including tulsi in your daily skincare routine.

- 1.Prevents hair loss
2. Banishes dandruff
- 3.Promote hair Growth.
- 4.Reduce hair fall.
- 5.Giving you Healthy and Problem free Hair.
- 6.Repair hair damage.

#### **Banishes Dandruff-**

Tulsi benefits hair by controlling four types of fungal strains that may cause dandruff. Apart from environmental factors such as heat, dust and pollution, it is also the everyday habits such as over-use of heat-styling tools, brushing wet hair vigorously and washing hair with hot water that cause hair fall. While losing a few strands of hair every single day is common, drastic hair fall is a concern that needs immediate treatment. Well, you can rely on this herbal treatment for hair fall.

#### **Prevent hair fall**

Hair fall is a common phenomenon among men and women and various factors contribute to thinning hair and hair loss, which includes genetics, medications, and others. Tulsi reduces hair fall by revitalizing hair follicles and strengthening roots. This herbal treatment also promotes circulation in your scalp and keeps it cool.

#### **Tulsi for strong hair**

Tulsi is rich in Vitamin K and antioxidants and improves the health of hair by enhancing blood circulation and promoting hair growth, amongst others.

Tulsi/Holy Basil has anticancer, anti-diabetic, antibacterial, and antifungal properties. Tulsi's anti-inflammatory components are known to stimulate the scalp.

#### **Prevents Premature Graying of Hair**

Tulsi for hair is known to have remarkable benefits. One of the main tulsi uses is reducing premature greying of hair. Including tulsi in your hair care routine is a wise choice for promoting healthy and vibrant hair. Regular application of tulsi can effectively maintain the natural colour of your hair by preventing premature greying. Tulsi is widely used in Ayurvedic products to prevent hair loss or thinning and to enhance hair thickness. One of the key ingredients that make this shampoo powerful is Tulsi, which is known for its therapeutic properties. Tulsi works wonders to strengthen hair and reduce hair fall. Basil can help to reduce greying, rejuvenate your hair and make it healthier due to the presence of anti-oxidants. It can help to prevent cell ageing and cell death.

#### **Dandruff and Dry Scalp**

Dandruff and having dry scalp can be a major cause of hair loss. Using basil for your hair can help to improve the circulation in your scalp and can help to reduce itching and dandruff, thereby improving hair growth.

#### **Strengthens hair**

Using basil for your hair can help to strengthen your hair, reduce the problem of hair thinning or your hair becoming brittle.

#### **Alovera**



**Synonym-** aloe emodin

**Botanical Name-** Aloe barbadensis miller.

**Kingdom** – plantae

**Order** – Asparagus

**Family-** Liliaceae

**Genus** – aloe

**Species-** A. Vera

**Biological source-** Aloe is dried latex of leaves of it. It is also known as curacao aloe, cape aloe and socotrine aloe

**Photochemistry:**

**Chemical constituents-**

Enzymes (i.e., amylase, catalase, and peroxidase) minerals (i.e., zinc, copper, selenium, and calcium) sugars (monosaccharides such as mannose-6-phosphate and polysaccharides & anthraquinones. Aloe vera contains 75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids. Vitamins: It contains vitamins A (beta-carotene), C and E, which are antioxidants. It also contains vitamin B12, folic acid, and choline. The active constituents of aloe vera include polysaccharides with protective effects on skin, as they exhibit antioxidant and anti-inflammatory properties

**Role of Aloevera in hair -**

- Strengthen and condition natural hair.
- Promote hair growth.
- Smooth natural curls.
- Lock in moisture.
- Reduce frizziness.
- Detangle hair

**Hibiscus flowers**



**Botanical name-** Hibiscus rosa-sinensis

**Kingdom-** plantae

**Order-** Malvales

**Family-** Malvaceae

**Genus-** hibiscus

**Species-** rosa Sinensis

**Biological source-** hibiscus, (genus Hibiscus), genus of numerous species of herbs, shrubs, and trees in the mallow family (Malvaceae) that are native to warm temperate and tropical regions. Several are cultivated as ornamentals for their showy flowers, and a number are useful as fibre plants.

**Chemical constituents –**

Some of chemical constituents present in different part of Hibiscus rosa-sinensis. Tannins, phlobatannins, saponins, cardiac glycosides, flavonoids, terpenoids. Taraxeryl acetate, sitosterol, campesterol, stigmasterol, ergosterol, citric, tartaric and oxalic acids. Phenolic, ascorbic acid.

**Uses of hibiscus flowers**

- Hibiscus for hair is highly beneficial in treating oily scalp issues such as dandruff and itchiness due to its astringent properties
- Hibiscus for hair has been traditionally used as a natural colour to mask grey hair.
- Hibiscus flowers and leaves contain high mucilage, which conditions the hair
  - Hibiscus Tea For Hair Growth
  - Hibiscus Stop Hair Fall

Hibiscus prevents and controls hair fall as it is rich in amino acids and Vitamin C, which improves keratin synthesis and stimulates hair follicles to strengthen them.

- Hibiscus Regrow Hair

Hibiscus for hair helps in promoting healthy growth by improving keratin production and stimulating the hair follicles, stimulate hair growth and prevent hair fall. It also acts as a natural hair colour to mask greys.

**Curry leaves**



**Synonym** bergera koenigii

**Botanical name-** murraya koenigii

**Kingdom-** plantae

**Order-** Sapindales

**Family-** Rutaceae

**Genus-** murraya . J. Koenig

**Species-** M. koenigii. L.

**Biological source-**

Murraya koenigii (L.) Spreng or its common name curry leaf tree is a small strong smelling perennial shrub commonly found in forests as undergrowth. It was originally cultivated in India for its aromatic leaves and for ornament is normally used for natural flavouring in curries and sauces.

**Chemical constituents-**

The oils from the curry leaves were found to contain mostly oxygenated monoterpenes. Using GC and GC-MS 33 constituents were found with linalool (32.83%), elemol (7.44%), geranyl acetate (6.18%), myrcene (6.12%), allo-ocimene (5.02),  $\alpha$ -terpinene (4.9%), and  $\epsilon$ - $\beta$ -ocimene (3.68%) as the main compounds Curry leaves are rich in flavonoids, vitamins, terpenoids, and nicotinic acid, among other beneficial compounds

**Uses -**

1. Strengthens the hair shaft.
2. Exfoliates Scalp

The antibacterial properties of curry leaf oil rejuvenates the hair follicles and removes dead skin cells and grime from the scalp, keeping it nourished and clean. It also has anti-inflammatory

properties to soothe scalp inflammation, itchiness, and minor infections.

### 3. Promotes Hair Regrowth

Curry leaf oil is enriched with proteins and amino acids that provide the required nutrition to the roots and strengthen the hair follicles. It takes overall care of the hair and scalp health to prevent hair breakage and control hair fall, making it one of the best home remedies for hair regrowth.

### 4. Prevents Premature Greying

Curry leaves are a powerhouse of antioxidants and the best vitamins for hair growth, that help increase melanin production to restore the natural hair pigment. It is an excellent home-grown ingredient to revitalise your hair follicles and prevent premature greying.

### 5. Cures Dandruff

Packed with antibacterial and fungicidal compounds, curry leaf oil for hair is effective to cure dandruff. It keeps your roots nourished and protects the scalp against climate changes causing dryness and itchiness. All of the benefits combined, curry leaves are one of the proven home remedies to get rid of dandruff.

**Neem**



**Synonym-** Azadirachta indica

**Kingdom-** plantae

**Order-** Sapindales

**Family-** Meliaceae

**Genus-** Azadirachta

**Species-** A.indica

**Biological source-**

Neem consists of the fresh or dried leaves and seed oil of *Azadirachta indica* J. Juss (*Melia Indica* or *M. Azadirachta* Linn.).

#### **Chemical constituents-**

The most important active constituent is azadirachtin and the others are nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin

The major phytochemicals present in Neem are glycoproteins, triterpenes, limonoids, flavonoids, phenols, tannins, nimbins, saponins, catechins, azadirachtin and Gallic acid

- ❖ Neem leaf compounds such as azadirachtin and nimbin have tremendous antioxidant activity
- ❖ Azadirachtin is an extract of fruit from the Neem tree, which is largely grown in India

#### **Uses of Neem-**

- Neem leaves essentially help to condition your hair from the root to the tip of the hair. Neem leaves make your hair healthy and drop the count of hair fall.
- Hair loss can be effectively treated with the herb neem, which is well-known for its medicinal properties.
- Neem is good to get rid of dandruff because of its antibacterial and anti-inflammatory characteristics.
- Neem strengthens the hair follicles and aids in the growth of hair development. Neem leaves have high fatty acid content and are used to cure scalp problems in various ways. Neem oil is one of the excellent by-products of neem that is essentially used to treat hair loss and baldness

#### **Benefits of neem leaves for hair**

- Conditions your scalp
- Promote healthy hair growth
- Soothe frizz
- Minimize greys

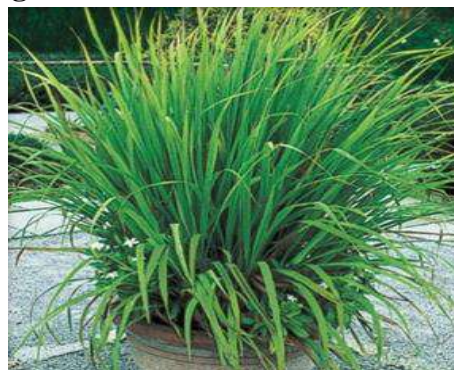
- Treat head lice
- Dandruff

Neem oil contains the active ingredient nimbidin. Some older research suggests Trusted Source that nimbidin can help suppress inflammation, which may make it useful in treating dermatitis, psoriasis, or other scalp irritation.

Neem is also a known antifungal. In some cases, dandruff and irritation can result from yeast build up on the scalp.

Although more research is needed, there's reason to believe that topical application may help alleviate these symptoms.

#### **Lemongrass**



**Synonym-**barbed wire grass, silky heads, oily heads, Cochin grass, Malabar grass, citronella grass or fever grass

**Scientific name-** *Cymbopogon citratus*

**Indian name-** malabar or cochin grass

**Order-** poales

**Family-** poaceae

**Genus-** cymbopogon

**Species-** c. Citratus

**Biological source-**

Lemongrass, (*Cymbopogon citratus*), perennial species of oil grass in the family Poaceae, often used in cooking.

**Chemical constituents-**

Lemongrass essential oil (LEO) carries a significant amount of numerous bioactive compounds, such as citral (mixture of geranial and neral), isoneral, isogeranial, geraniol, geranyl acetate, citronellal, citronellol, germacrene-D, and

elemol, in addition to other bioactive compounds. These components confer various pharmacological actions to LEO, including antifungal, antibacterial, antiviral, anticancer, and antioxidant properties

Main components are -

- Citral
- Citronellal
- Geraniol
- GeraniolCymbopogon citratus
- Piperitone
- Neryl acetate
- Neral
- Bergamotene

#### Uses of lemongrass in hair -

Lemongrass essential oil is a good treatment for hair loss because of its nourishing nature. If you are facing early hair loss problems, using lemongrass essential oil will sort the problem. It cleans dirt from the scalp, increasing the blood supply to your hair.

- Controls Dandruff

By balancing the scalp, Lemongrass essential oil also naturally treats dandruff. Dandruff occurs as a result of too much oil (also known as sebum), which is often triggered by dry skin.

- Freshens and Deodorizes

With its earthy yet lemony scent, Lemongrass oil is perfect for keeping your scalp and hair feeling fresh and clean. It also has antimicrobial properties that neutralize odor-causing bacteria.

- Supports New Hair Growth & Volume

Although Lemongrass essential oil can't prevent or reverse genetic hair loss, it helps heal your follicles and stimulates new hair growth. This reduces excess shedding and thinning due to stress or damage from harsh treatments or chemical products.

Using Lemongrass also promotes more volume and shine. It can make fine hair appear thicker and lifted from the scalp.

- Smooths Frizz, Flyaways & Split-Ends- Lemongrass essential oil for hair keeps hair balanced and acts as a natural healing serum.
- Repairs Damaged Hair

#### Amla



**Synonym:** Emblica officinalis, Indian gooseberry, emblic myrobalans,

**Kingdom-** plantae

**Order-** Geraniales

**Family-** Euphorbiaceae

**Genus-** Emblica

**Species-** officinalis Gaertn

**Biological source –**

Emblica, Indian goose berry, amla. This consists of dried, as well as fresh fruits of the plant Emblica officinalis Gaertn (Phyllanthus emblica Linn.), belonging to family Euphorbiaceae

**Chemical constituents-**

Officinalis, especially fruit, contain numerous phytoconstituents viz. higher amount of polyphenols like gallic acid, ellagic acid, different tannins, minerals, vitamins, amino acids, fixed oils, and flavonoids like rutin and quercetin.

Main Active Compounds Emblicanin A and B, punigluconin and pedunculagin

Gallic acid, chebulagic acid, geraniin, ellagic acid, and corilagin, Quercetin, rutin, Gallic acid, mucic acid, and beta-glucogallin

Emblicanin A and B, punigluconin, pedunculagin, rutin, and gallic acid

**Uses of Amla in hair oil**

Amla is one of the trusted herbs that help maintain a healthy scalp by retaining moisture and



balancing pH levels. The high concentration of vitamin C in amla tackles dandruff and strengthens the hair follicles. In addition, amla contributes to a healthy scalp and encourages healthy hair growth

- Reduces hair fall and prevents hair loss

Amla is rich in Vitamin C, which helps in strengthening the hair follicles, reducing hair fall.

- Helps in treating dandruff

Amla has antifungal properties that can help in treating dandruff and promoting a healthy scalp.

- prevents premature greying of hair

Amla is believed to prevent premature greying of hair due to its high content of antioxidants.

- Treats itchy or irritated scalp

If you have itchy or irritated scalp then benefits of Amla for hair can help you relieve scalp conditions and improve scalp health and hair follicle health.

- Protects from external damage to hair

Amla contains tannin and calcium, which help protect your hair from photodamage and heat damage. Therefore, amla benefits for hair will help you enjoy damage-free hair.

- Amla can protect the hair from external damage

“The tannin and the calcium present in amla save the hair from any kind of photo-damage and heat damage and therefore healthier hair is promoted,” states Dr Chaturvedi. Tannins are phenolic compounds which easily bind to keratin proteins of the hair, preventing them from breaking down.

- Amla can reduce hair loss

Just as amla can improve actual growth, topical application can actually reduce hair loss too. Research shows that that amla oil was a powerful inhibitor of 5-alpha reductase. The medication finasteride, which is used to treat male and female pattern baldness, also works by inhibiting 5-alpha reductase. This is particularly key for those with hormonal hair loss, due to PCOS or thyroid imbalances.

## Coconut Oil



**Synonym-** Cocos nucifera, coco, coco palm, cocoa palm, coconut palm, coconut tree

**Kingdom-** Plantae

**Order:** Arecales

**Family:** Areaceae/ palmae

**Genus:** Cocos

**Species-** c. Nucifera

**Biological source-**

Coconut oil is the oil expressed from the dried solid part of endosperm of coconut, *Cocos nucifera* L., belonging to family *Palmae*.

**Chemical constituents-**

Coconut oil is made up of about 90% saturated fats and 9% unsaturated fats. However, the saturated fats in it differ from saturated fats in animal fats. Over 50% of the fats in coconut oil are medium chain fatty acids, such as lauric acid (12:0). Coconut oil is the highest natural source of lauric acid. Coconut oil comes from the nut (fruit) of the coconut palm. It contains medium-chain fatty acids, including capric acid, caprylic acid, and lauric acid. About 52% to 85% of coconut oil is made up of specific saturated fats, called medium-chain fatty acids. Coconut oil is composed of the fatty acids, caprylic acid C-8:0 (8%), capric acid, C-10:0, (7%), lauric acid C-12:0, (49%), myristic acid C-14:0(8%), palmitic acid C-16:0 (8%), stearic acid C-18:0 (2%), oleic acid C-18:1 (6%) and 2% of C-18:2 linoleic acid.

**Uses-** Relieves symptoms. Studies show that coconut oil is effective at reducing symptoms of scalp psoriasis. While it cannot heal the condition, it does provide relief from symptoms of scalp

irritations. Moisturization. In addition to being good for your scalp, coconut oil also moisturizes your hair. Since it's easily absorbed, it works better than other oils at repairing dry hair. Keep in mind that coconut oil alone may not be effective as a shampoo to cleanse hair, but as a pre-shampoo treatment, it will condition hair. After you treat your hair with coconut oil, use your regular shampoo to wash it out. Coconut oil is predominantly made up of a medium-chain fatty acid called lauric acid. This gives coconut oil a long, straight structure, which is more easily absorbed deep into the hair shaft. Rubbing oil on your hair before or after washing helps prevent damage. Coconut oil can improve the health and condition of your hair. It works by helping prevent protein loss in your hair. It is beneficial to apply it to hair both before and after washing it.

Coconut oil is an extremely versatile health and beauty product. People use it for all sorts of things, from cooking and cleaning to moisturizing their skin and removing makeup. Others often use coconut oil to help improve the health and condition of their hair. This article explores the pros and cons of using coconut oil on your hair.

Daily grooming practices can damage your hair. Daily grooming practices like washing, brushing, and styling can cause damage to your hair and leave it looking frizzy, broken, and dry.

- Coconut oil could help you grow your hair longer
  - Moisturizing your hair and reducing breakage
  - Protecting your hair from protein loss and damage when wet
  - Protecting your hair from environmental damage like wind, sun, and smoke
- Other benefits of coconut oil for hair

#### **Possible benefits include:**

- Lice prevention.

One small study found that when combined with anise in a spray, coconut oil was 40% more

effective at treating head lice than the chemical permethrin. Sun protection. UV filters can help protect your hair from sun damage. Some in vitro and skin studies have found coconut oil to have a sun protection factor of 8, so putting it on your hair could be used.

- Dandruff treatment.

Dandruff can be caused by an overgrowth of fungus or yeast on the scalp. While no studies have examined coconut oil specifically, it has antimicrobial properties and could be useful for treating dandruff.

- Hair loss prevention.

Excessive grooming can damage the hair shaft, which in Coconut oil may help fight scalp infections, repair split ends, and grow hair faster and healthier.

Coconut oil is a fatty oil that's made from raw or dried coconuts. It looks like solid, white butter at room temperature and melts when heated. This natural oil is traditionally used as a food, for cooking, and as a hair and beauty treatment.

There's plenty of medical research on the health benefits of coconut oil for your body, skin, and hair. Some people use coconut oil on their hair and scalp because they believe that it helps hair grow faster. We'll explore if this is actually effective.

- Coconut oil and hair

coconut oil can make your hair grow faster. However, coconut oil can help improve hair and scalp health.

- Fights fungal infections

Healthy hair begins at the root. Keeping your scalp healthy may help your hair grow better.

One recent lab study found that coconut oil helped to get rid of some types of fungal infections.

Coconut oil may help heal or prevent dandruff and other fungi on the scalp. More research is needed to know if coconut oil has the same health benefits on the skin and scalp.

- Calms irritation



Coconut oil is a natural saturated fat. The high fat content in it may help calm scalp irritation, flaking, and itching. The fat in coconut oil can also help seal in hair moisture.

### **Reported activities from modern literature**

#### **Tulsi**

##### **Lopamudra sethi, et. al. (July 2020)**

(*Oscimum sanctum* L.), holly basil, is indigenous to the Indian mainland and profoundly respected for its restorative uses inside the Ayurvedic and Siddha clinical frameworks. Numerous in vitro, creature and human investigations bear witness to tulsi having different restorative activities including adaptogenic, antimicrobial, calming, cardioprotective, and immunomodulatory impacts, yet to date there are no precise surveys of human research on tulsi's clinical adequacy and security. We directed a complete writing audit of human examinations that gave an account of a clinical result after ingestion of tulsi. We scanned for examines distributed in books, theories, meeting procedures, and electronic database

##### **Ravi Kant upadhyay, et, al (march 2017)**

The present review article explains medicinal and therapeutic uses of Tulsi plant in traditional medicine. Tulsi (*Oscimum sanctum* [OS] Linn.) is an aromatic plant belongs to family Lamiaceae. It is traditionally used for preparation of various Ayurvedic formulations for treatment of bronchitis, influenza, and asthma. Hot concoction of Tulsi leaves is usually provided for immediate relief in cold, sneezing nose, cough, malaria, and dengue. This article explains the biological effectiveness of OS against diabetes mellitus, hypertension, cancers, respiratory diseases, arthritis, various microbes, and parasites. Tulsi extracts and its various bio-organic constituents showed antioxidant activity, anti-atherogenic effect, anti-aging, immunomodulatory, anti-inflammatory, antistress, hepatoprotective, radioprotective, antihelminthic, repellent and larvicidal activity. Tulsi active ingredients showed

anti-inflammatory properties and also play a role in modulation of both cellular and humeral immunity. Plant shows healing properties in hepatic injury and gastric ulcer. It relieves from stress, restore and improve body immunity and digestion. *Oscimum basilicum* L. Contains (-)-linalool, eugenol and methyl chavicol, methyl chavicol (93.0%), gamma-caryophyllene as major constituents.

#### **Aloevera:**

##### **Dr.S. Manohar Babu, et, al (July 2021)**

Aloe vera is a characteristic item which is presently a days utilized in the field of cosmetology. Our definition is to detail a home grown cleanser utilizing a plant extract which is utilized as hair washing and molding cleanser to treat balding and block twitch scalp and dandruff. Is effective than the marketed shampoo as we have used essential oils like coconut oil which is derived from the coconut palm fruit , lavender oil which is derived from the flowers of lavender, rosemary oil derived from the flowering tops of rosemary. Eucalyptus oil which is derived from the leaves of eucalyptus plant and some other excipients like antioxidants stabilizers, solubilizing agents, surfactants, cleansing agents, coloring agents and preservatives. All of these are used for the aim to improve the smoothening, shining and growth of the hair. Our study has evaluated all the tests like foaming ability test, pH determination, skin irritancy test, conditioning performance, saturated and in all those test it has shown good results when compared to the marketed shampoo.

##### **K. P. Sampath Kumar, et, al. (2010)**

Aloe vera contains numerous vitamins and minerals, enzymes, amino acids, natural sugars and Agents which may be anti-inflammatory and anti-microbial. The combination and balance of the Plant's ingredients are what purportedly gives it its healing properties. The part of the Aloe vera Which is used are the leaves. The Aloe is an



Emollient, Purgative and Vulnerary. It is also used For its antibacterial, anesthetic and antiseptic properties, and is good to use as a tool for Restoration of tissue. It is most commonly used on burns and minor cuts, especially good for Sunburns, although it is being used for the treatment of skin cancer. Aloe is very useful on rashes Caused by Poison Ivy, and it may help to draw out infection. It may help with Vaginal Yeast Infections, although this is not solid at this time. Aloe be made into a warm tea, made from the Juice as a wash for eyes. The washing of eyes with Aloe may protect the eyes from ultraviolet Rays from the sun. It can be used as a purgative. Aloe is also an extremely powerful laxative, and It is not recommended that it is taken internally. It is recommended that the fresh juice from the Plant is used, and not the store-bought juice within other products or on its own. The reason for This is that the medicinal use of the plant diminishes with time, and there is much questioning It gives a healthy and supple look to the skin by reducing wrinkles, curing acne, rejuvenating and giving it a youthful glow.

#### **Hibiscus:**

##### **Nur Nadiah Syahirah Rusdi et,al.(2020)**

The Hibiscus rosa-sinensis Linn. (HRS), the national flower of Malaysia, is famous for its use in various traditional medicine. However, its usage as an activating agent has not received much attention it deserved. Therefore, this study was directed towards the use of HRS for hair growth as a substitute for the present commercially available drug. In this work, petroleum ether was used to extract both leaves and flowers of HRS. Its potential for hair growth was evaluated in vivo. One percent crude extract of leaves and flowers of HRS in liquid paraffin was applied topically over the shaved rats of Dawley Sprague. The rats were monitored and assessed for growth of hair for 42 days. The results for the study were divided into two parts namely the hair length was determined

in vivo and the histology study of the shaved area of rats. From this study, it was concluded that the leaf extract exhibited more potential for hair growth compared to the flower component. This finding is promising and serves as a potential substitute for the usage of HRS extract in hair growth treatment. In addition, being a natural product further adds its benefit as compared to synthetic chemicals which may cause harmful side effects to the consumers.

##### **Anil Kumar, et, al, (2023)**

Hibiscus rosa sinensis commonly known as Gurhal is large shrub belonging to family malvaceae. The Plant is Native to Asia have been a source of medicinal compounds since ancient times and used to treat various Diseases in humans. Hibiscus rosa sinensis is known as China rose. This plant has various important uses for Treating wounds, inflammation, fever, and cough, diabetes, infections caused by bacteria, fungi, hair loss, and Gastric ulcers in several tropical countries. Many of the modern clinical drugs are of natural origin are of natural Product origin play an important role in drug development Programs in the pharmaceutical industry. Hibiscus Rosa sinensis is one of the miraculous medicinal herbs and play a major role in herbal health supplements and Medicines both in daily self-care and in professionally managed health care system. Phytochemical investigation Hibiscus contains various chemical constituents such as alkaloids, flavonoids, Terpenoids, saponins, tannins cardiac glycoside, carbohydrates reducing sugar, essential oils, steroids proteins, And free amino acid, The present study on Hibiscus rosa sinensis that shows the pharmacological activities such As it acts as an anti-inflammatory, antipyretic, antimicrobial, dermatological, anticonvulsant, antiparasitic, Neuroprotective, antitussive, antioxidant. Anxiety. Anti-depressant, and antidiabetic etc. The current review will Discuss the chemical constituents,



traditional uses, pharmacological activities and importance of *Hibiscus rosa Sinensis*.

#### **Neem oil:**

##### **Caitlin Duggan, et al. (2024)**

Neem oil has been used in traditional medicine in India for over a millennia. It has been used to treat ailments such as diabetes, ulcers, and even smallpox. Neem oil contains nimbidin, which research has shown can reduce inflammation<sup>1</sup>. The anti-inflammatory, antibacterial, and antioxidant properties of neem oil can help to treat many scalp issues, including dandruff, inflammation, and itchiness.

##### **Kathryn Watson et, al,(2019)**

Neem oil is Topical by-products of the neem tree, a type of evergreen that primarily grows in India. The oil is pressed from the tree's fruits and seeds. This "wonder plant" has been widely used in traditional medicine and has demonstrated anti-inflammatory and antibacterial effects. But can using neem oil really result in a healthier scalp and hair? Here's what the research says, how to use it topically, and more. How is it supposed to benefit your hair? Anecdotal reports suggest that neem can: Condition your scalp, Promote healthy hair growth, Temporarily seal hair follicles, Soothe frizz, Minimize grays, Reduce dandruff, Treat head lice. Many of these claims have yet to be studied through clinical research, so its overall efficacy is unclear.

#### **Lemon grass:**

##### **David Temitope Ayodele, et, al, (November, 2019)**

*Cymbopogon citratus* is an aromatic plant of Gramineae family well-known as lemon grass. *Cymbopogon* is derived from Greek word "kymbe - pogon" which means boat-beard. The lemon-like scent could be ascribed to the existence of a cyclic monoterpene (citral). The herb is a perennial grass, native and distributed in Asia, Africa, South and North America. It contains considerable group of flavonoids, essential oils, phenolic compounds and

other phytochemical constituents which possesses pharmacological activities such as anti-obesity, anti-bacterial, anti-fungal, anti-nociceptive, anti-oxidants anti-diarrheal, and anti-inflammatory properties which could enhance health. Owing to its volatility and lemon-like aroma, citronella oil is used as deodorants in cosmetics, toiletries, insecticides (bio-pesticide) and spent grass in agriculture, in pharmaceutical and chemical industries it is incorporated in the manufacture of perfumes, fragrances, soaps, detergents, aftershaves, cosmetics and as culinary flavor in food industries. This literature review was tailored to widely investigate the ethnobiological, phytochemical compounds and pharmacological assays in attempt to divulge other plausible therapeutic activities. The leaf contain vital bioactive compound's which dictate the anti-inflammatory, antiseptic, anti-dyspeptic, and anti-fever effects, antispasmodic, analgesic, antipyretic, tranquilizer, anti-hermetic and diuretic properties of the plant. They serve as deodorants in several products such as perfume, local soaps, candle and other insect repellents. It has been used as snake and reptile repellents in some part of Asia and African countries.

##### **Shruti Sunil Ranade, et, al, (2015)**

Lemon grass, popularly known as citronella grass is a member of the Poaceae family and belongs to the genus *Cymbopogon*. The genus *Cymbopogon* constitutes of approximately 140 species that show widespread growth across the semi-temperate and tropical regions of Asian, American and African continents. Australia and Europe are home to only a few species of lemon grass. Also known as 'Squinant' in English, lemon grass is known by various other colloquial names throughout the world. The members of the *Cymbopogon* genus produce volatile oils and thus are also known as aromatic grasses.<sup>1,2</sup> A strong lemon fragrance, a predominant feature of this grass, is due to the high citral content of its



oil. The redolence of the oil enables its use in soaps, detergents, etc. As a good source of citral, it finds an application in the perfumery as well as food industries. It is also the starting material for the manufacture of ionone's, which produce Vitamin A.<sup>3</sup> Lemon grass contains several bioactive compounds that impart medicinal value to it. Considerable evidence is available for its ethno pharmacological applications.<sup>4</sup> According to the WHO, herbal medicine is considered an important part of the healthcare industry by more than two-thirds of the population in developing countries.<sup>5</sup> Apart from an overall description of lemon grass, this review article also highlights its medicinal properties that make it a potent herb for pharmacognostic applications

**Amla:**

**Krishna Mohan Gottumukkala, et, al, (2014)**

*Phyllanthus emblica* Linn. Or *Emblica officinalis* Gaertn. Commonly known as Indian gooseberry or Amla is one of the most important Medicinal plants in Indian traditional systems of medicine (Ayurveda, Unani and Siddha). It is a well-known fact that all parts of amla Are useful in the treatment of various diseases. Among all, the most important part is fruit. Amla fruit is widely used in the Indian System of medicine as diuretic, laxative, liver tonic, refrigerant, stomachic, restorative, anti-pyretic, hair tonic, ulcer preventive and For common cold, fever; as alone or in combination with other plants. Phytochemical studies on amla disclosed major chemical Constituents including tannins, alkaloids, polyphenols, vitamins and minerals. Gallic acid, ellagic acid, emblicanin A & B, phyllembein, Quercetin and ascorbic acid are found to be biologically effective. Research reports on amla reveals its analgesic, anti-tussive, anti-Atherogenic, adaptogenic; cardio, gastro, nephro and neuroprotective, chemopreventive, radio and chemo modulatory and anti-Cancer properties. Amla is also reported to possess potent

free radical scavenging, antioxidant, anti-inflammatory, anti-mutagenic, Immunomodulatory activities, which are efficacious in the prevention and treatment of various diseases like cancer, atherosclerosis, Diabetes, liver and heart diseases. In this article, we discuss the nutritional value, biochemical constituents, traditional uses, Medicinal value of amla and its use as a household remedy. We also emphasized the mechanisms behind the pharmacological Activities based on the recent research reports and tried to summarize the results of research done from the past 5 years with Proper specifications on the future prospects in a pharmacological perspective.

**shirshail ghurghure, et, al, (2019)**

The Use of medicinal plants in the management of various illnesses is due to their phytochemical constituents and dates back to historical age. While being exceptional for its ethnic, ethnobotanical and ethnopharmaceutical use, it is an important ingredient of many Ayurvedic medicines and tonics. It is one of the richest natural sources of Vitamin C and plays a vital role in preventing innumerable health disorders. It is considered to be a safe herbal medicine without any adverse effects. So it can be concluded that the Indian gooseberry is a traditionally and clinically proven fruit for both its application and efficacy. Now a days, research on Indian traditional medicinal plants has gained a new recommence. Although, the other systems of medicine are effective they come with a number of undesired effects that often lead to serious complications. Being natural, herbal medicine alleviates all these problems. *Emblica officinalis* (Amla) has an important position in Ayurveda- an Indian indigenous system of medicine. Amla due to its strong antioxidant and biological properties prevent innumerable health disorders as it contains essential nutrients. It can be used as a possible food additive or in nutraceuticals and

biopharmaceutical industries. In this review, we tried to make a summary the traditional and scientifically proven uses of Amla and tried to establish their basic mechanisms.

#### **coconut oil:**

**G. s. Vala, et, al. (December 2014.)**

Coconut oil is one of the best natural nutrients for hair. It helps in healthy growth of hair a shiny quality. It is also highly effective in reducing protein loss which can lead to various unattractive or un healthy growth qualities in your hair. Coconut oil is extensively used in the Indian sub-continent for hair care. Most of the people in those countries apply coconut oil on their hair every day after bathing or showering. It is an excellent conditioner and helps the re-growth process of damaged hair. It also provides the essential proteins required for nourishing and healing damaged hair. Research studies indicate that coconut oil provides better protection to hair from damage caused by hygral fatigue

**Jiao-Jiao Yin et.al (2024)**

Coconut oil contains a rich amount of medium-chain fatty acids, including lauric acid, Decanoic acid, and octanoic acid, as well as the corresponding medium-chain triglycerides. It possesses functional attributes such as facile digestion and absorption, as well as Antibacterial and antioxidant properties. The study utilized the Citespace and Overviewed Visual analysis software to examine the quantity of published papers, authors, publishing Institutions, research hotspots and frontiers of 3442 effective literatures on the theme of "coconut oil" in the Web of Science (WoS) Core Collection database. The research on coconut Oil can be condensed into four primary sections: (1) investigation and utilization of Physiochemical characteristics of coconut oil, (2) analysis of nutritional composition and Study of the effectiveness of coconut oil, (3) identification of adulteration in coconut oil, (4) Evaluation of the impact of coconut oil as a dietary

supplement on animal metabolism. Additionally, research focal points have evolved in three distinct phases. Prior to 2008, Numerous studies were conducted to investigate the precise fatty acid makeup of coconut oil And its potential for lowering cholesterol levels. From 2009 to 2016, significant emphasis Was placed on examining the impact of coconut oil on methane production in ruminants. Between 2018 to 2023, the main focus will be on investigating how nanoparticles can alter The properties of coconut oil. In the future, the anticipated research areas of interest are Expected to focus on the rapid detection method of coconut oil, the efficacy of coconut oil And the advancement of coconut resources. The objective of this review is to provide Researchers with relevant information about coconut oil, aiming to foster the continued Growth of the coconut oil industry.

#### **Curry leaves:**

**M. S. bhosale, et, al (2021)**

Native to India, *Murraya koenigii* (Curry Leaves/Kadi Patta/Mitha Nimba/Giri Nimba) is found almost anywhere in Indian subcontinent, except the higher Himalayan levels. There are several diseases that protect components (natural compounds) in the curry tree that can be used as a natural compound. A source for the manufacture of modern, complementary and revolutionary medicines. Traditionally it is used as an antiemetic, antidiarrheal, febrifuge and blood purifier. The entire plant is known to be a tonic and a stomach. As an antioxidant, anti-diabetic, antibacterial, antihypertensive, cytotoxic and also in the treatment of respiratory problems in the bronchial system. In curry and other dishes, the leaves are traditionally used as a seasoning. Curry leaves are useful for hair because they are high in beta-carotene and protein content, which are instrumental in preventing hair loss and hair thinning. Proteins are necessary for hair growth because hair is made of protein and is also vital for



hair development. The amino acid content that strengthens hair fibre is also high in curry leaves. It is important to compile the well-known pharmacology and phytochemistry of *M. koenigii* and the therapeutic potential of this plant in the form of a study.

### **Dipika bhusal, et, al, 2021**

Curry leaf (*Murraya koenigii*) belongs to the family Rutaceae consisting 150 genera and 1600 species. The use of *Murraya koenigii* dates back to 1<sup>st</sup> and 4<sup>th</sup> century AD. Tamil and Kannada literature describes *Murraya koenigii* as Kari used as a flavoring agent. It is considered as one of the important ingredients in South Asian cuisine for its fragrance and aroma.

### **Hair disorders**

#### **Signs and Symptom**

1. **Alopecia (nonscarring)** --involves hair loss all over or in circular areas, a receding hair line, broken hairs, a smooth scalp, inflammation, and possibly loss of lashes, eyebrows, or pubic hair. Alopecia (scarring) is limited to particular areas. Symptoms are inflammation at the edge and follicle loss toward the center of lesions, violet-colored skin abnormalities, and scaling.
2. **Hirsutism** --is male pattern hair growth in women, irregular menstruation, lack of ovulation, acne, deepening voice, balding, and genital abnormalities. Symptoms of hair shaft disorders are split ends and hair that is dry, brittle, and coarse, as well as skin and other abnormalities.

#### **What Causes It?**

Hair disorders can be caused by any of the following:

1. **Alopecia** (nonscarring). Skin disorders, certain drugs, certain diseases, autoimmunity, iron deficiency, severe stress, scalp radiation, pregnancy, or pulling at your own hair.
2. **Alopecia** (scarring). Skin disorders, diseases, or bacterial infections.
3. **Hirsutism**. Excess of androgen (a steroid hormone that stimulates development of male sex organs and secondary sexual characteristics). This overproduction of androgen could result from certain drugs or conditions.
4. **Hair shaft disorders**. Overprocessed hair (such as coloring, permanent waves, or excessive heating) or certain diseases.

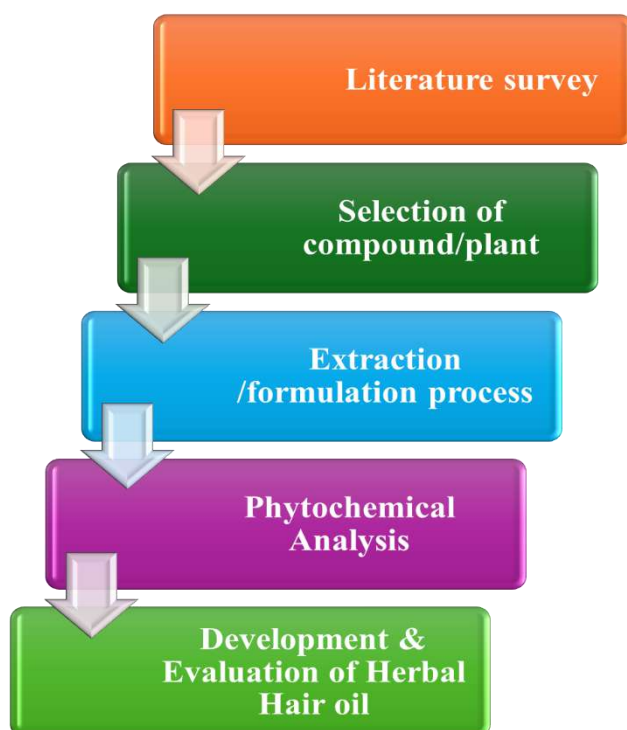
#### **Types of hair loss**

1. Androgenetic Alopecia-
2. Telogen Effluvium
3. Anagen Effluvium
4. Alopecia Areata
5. Tinea Capitis
6. Cicatrice Alopecia
7. Hair Shaft Abnormalities

#### **Plan of work**







## Methods and materials

### Herbs materials –

Tulsi, coconut oil, lemongrass, aloe vera, neem, Curry leaves, amla, hibiscus. Etc

### Instruments –

Beaker, stirrer, measuring cylinder, burner, plastic containers, test tube, test tube holder, sieve, conical flask, muslin cloth.

### Formulation of poly herbal hair oil

Sr. No	Herbs used	Biological name	Quantity
1	Tulsi leaves	<i>osimum sanctum</i>	4gm
2	Amla	Indian gooseberry	1.5gm
3	Neem	<i>Azadirachrta indica</i>	2gm
4	Curry leaves	<i>Murraya Koenigii</i>	1gm
5	Coconut oil	<i>Cocos nucifera,</i>	60ml
6	Hibiscus flowers	<i>Hibiscus Rosa Sinesis</i>	2gm
7	Lemongrass	<i>cymbopogan citratus</i>	1gm
8	<b>Aloe vera leaf</b>	<i>Aloe Barbadensis leaf</i>	3gm

## METHODOLOGY

### Formulation procedure

#### Stepwise process no-1

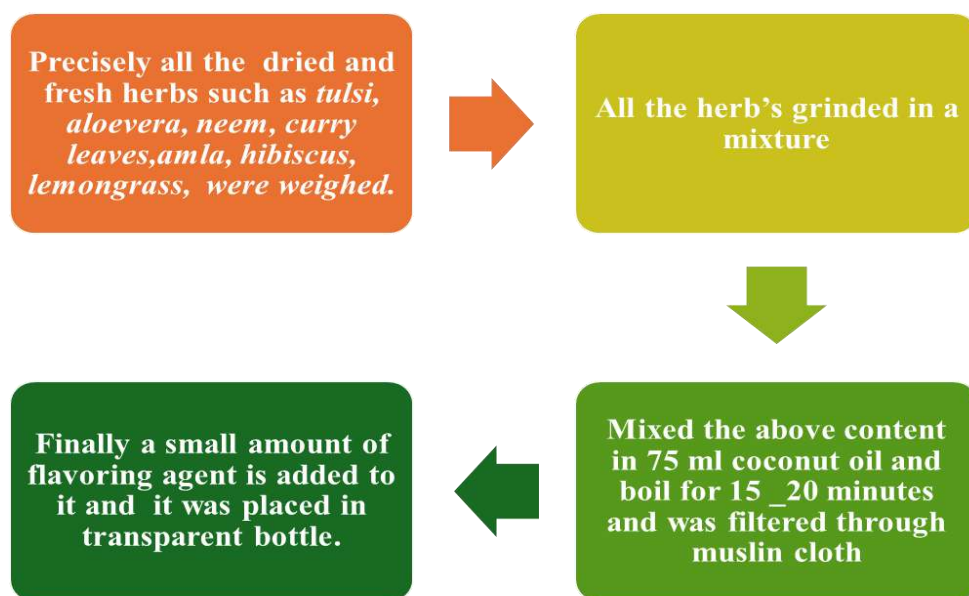
The herbs used in the present study for making herbal Hair oil were dried, crushed, and passed in sieves and it Was used in coconut oil base. The hair oil was prepared By using simple homemade method.

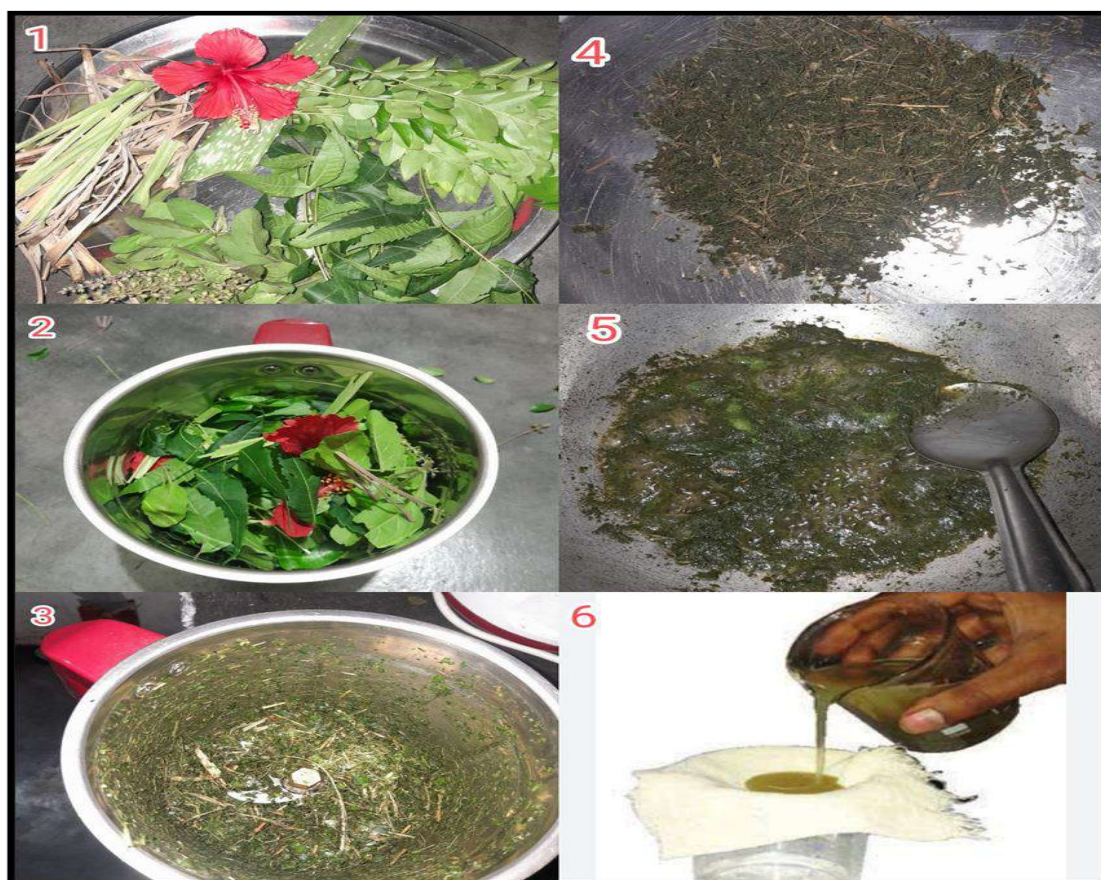
First is direct boiling method in which crude drugs were Powdered and directly boiled in Coconut oil, And all herbs with continuous stirring and Heated until the drug completely gets extracted into the Oil

- 1) Firstly take all fresh Herb's in measured quantity
- 2) All the herbs are grinded in mixture



- 3) Add herbs one by one as like-
  - Leaves of neem
  - curry leaf,
  - amla,
  - leaf of aloevera,
  - Hibiscus flower
  - Tulsi leaf
  - Lemongrass
- 4) Add coconut oil in the steel container and heated separately at low gas flame... Then Added all ingredients in that in constantly stirring
- 5) Heat this all Ingredients in coconut oil at lower gas flame.. Be carefully that it should not get dark colour
- 6) Maintain temperature that it do not let to burn all ingredients otherwise it will get bitter smell to the product
- 7) After heating 20 minutes.. Hold it for cooling purpose..
- 8) Ones the formulation get cooled transfer this through muslin clothe
- 9) Add fragrance to it .. For good appearance we have used Mogara( Arabic jasmine)extract perfume
- 10) Now. Perform evaluation test for Polyherbal hair oil
- 11) After all process of optimization and evaluation transfer this oil in well suitable tight container.
- 12) Add label to this Polyherbal hair oil product.





**Figure no. 10 polyherbal Hair Oil product**

**EVALUATION PARAMETERS:**

The prepared vegetable oil was subjected to physical and biological evaluation.

**Acid content:** preparation of 1 molar solution 0.56 g of KO granules were weighed and dissolved in 100 ml of distilled water and continuously stirred.

The prepared 0.1% KOH solution was poured into the beet. Sample preparation 10 ml of al was measured, dissolved in 25 ml of ethanol and 25 ml of the mixture and Shaken. 1 mL of phenolphthalein solution was added and titrated with 0.1 M KOH solution.

**Saponification value:** 1 ml of oil was accurately weighed into a 250 ml Erlenmeyer flask and 10 ml of Ethanol ether mixture (21) was added. 25 ml of 0.5 N alcoholic KOH solution was placed in this bottle. The flask was kept for 30 minutes and the flask in 0.5 N HCl. Using a phenolphthalein indicator. Zero Titration was also done without taking the oil (sample). The amount of KOH in mg that was calculated.

**PH:** ph of herbal oil was determined by PH meter. The most accurate cone method for measuring PH is A laboratory device called a probe and material, a PH meter. A glass electrode sensor through electro small voltage is passed. The Muter voltmeter measures the electronic impedance of the glass electrode and displays Posits instead of volume. Typically, a pH meter must be calibrated with each use two Standard solutions of known pH are prepared by dipping Moment into the probe liquid until the meter Registers a reading.

**Viscosity:** The viscosity of the herbs was determined with a viscometer Ostwald and Take the specific Gravity bottle, wash it with distilled water, dry in an oven for 15 minutes, cool, cap and weigh (a) Now Fill the same specific gravity bottle with the sample and cap and weigh again (b) Determine the weight Of the sample per milli liter by subtracting the mass (ba).

**Susceptibility test:** 1 cm of prepared plant cells was applied to the skin of the hands and exposed to Sunlight for 4-5min.

**Table no. 2 Phytochemicals Evaluation of Polyherbal Hair oil**

Name of the Test	Results
Alkaloids	-ve

Flavonoids	+ve
Tannins	+ve
Saponins	-ve
Phenols	+ve
Glycosides	+ve
Steroids and Terpenoids	+ve

#### Physico- chemical evaluation -

Physico- chemical parameters	Observation
Colour	Lemon yellow
Texture	Oily liquid
Irritancy	Non-irritant
Solubility	Non-polar solvents
Odour	Pleasant
State	Liquid
PH	7-7.5
Viscosity	0.92
Spreadability	Easily spreads
Specific gravity	1.09
Stability study	Stable
Skin irritation	No irritation
Susceptibility test:	Susceptible to all type of skin nature
Acid value	5.2
Grittiness	Smooth

#### CONCLUSION –

Polyherbal hair oil is one of the most well recognized Hair treatments. Herbal formulations provide best Mixture of vitamins, antioxidants, essential oils, and Also provides nutrients of hair growth. These Formulations maintaining good hair growth of hairs, stopping hair loss, reduces dandruff of hairs, also Shining of hairs. All the parameters showed that they are within the limits And as per the standards. Since all the ingredients added Maintain Have many advantages, this oil will help in maintaining Good growth of hair by Promoting hair growth, turning grey Hair to black, Hair fall, protects from dandruff, provide Shining, results in lustrous looking hair, Treating dry scalp, Increasing scalp blood circulation, Treating folliculitis and Scalp acne, Treating head lice,



Eliminating scalp odor, Treating fungal infections and dandruff.

### **FUTURE SCOPE**

The aim of present study involves preparation of polyherbal hair oil using plant materials. The prepared polyherbal hair oil evaluated different parameters within the acceptable limits. Such as phytochemical screening, organoleptic characterization, specific gravity, pH, viscosity, acid value, saponification value, refractive index, and also stability study. Antimicrobial assay of the polyherbal hair oil was studied by the zone inhibition method. And these helps reduces dandruffs and scalp of hairs. And to provide nutrition's of hairs. The antioxidant activity of the oil was studied by DPPH radical scavenging activity. The primary skin irritation test is carried out. Hence, these polyherbal hair oil increases hair growth, reduces hair loss, providing protection against dandruff. Now-a-days increasing demand of herbal formulation than synthetic formulation. They have better safety and also fewer side effects. Polyherbal hair oil using various fresh leaves of Hibiscus Rosa Sinesis, Aloe Barbadensis leaf, curry leaves, amla, . These formulations coconut oil as the base. Hair care products used both hair tonic as well as hair grooming aids.

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**HOW TO CITE:** Swapnil Kale\*, Harshali Mohurle, Sakshi Mhaske, Nikita Gade, Mrunal Gadakh, Sneha Kanase, Optimization and Analysis of Herbal Infused Hair Oil Formulation for Enhance Hair Growth Activity, *Int. J. of Pharm. Sci.*, 2024, Vol 2, Issue 7, 1587-1608. <https://doi.org/10.5281/zenodo.12793038>