

A COMPREHENSIVE REVIEW ON A SELECTED POLYHERBAL HAIR OIL FOR THE MANAGEMENT OF HAIR FALL

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Abstract:

Clinical research has shown that herbs and herbal medications are beneficial for hair growth. Both men and women are quite concerned about hair loss issues, which are primarily related to dandruff, fading, and hair loss. For hair loss, there are a number of synthetic medications that have serious side effects and do not provide a long-term solution. The creation of an herbal hair oil formulation that can address hair loss and other issues is the primary goal of this project. The market for herbal cosmetics is expanding, and they are a priceless natural gift. The herbs were combined in a predetermined ratio with a base of coconut oil to create the hair oil. Hair oils have been traditionally used for hair nourishment, scalp health, and prevention of hair damage. This report examines the formulation, properties, and benefits of hair oils, focusing on their role in improving hair strength, shine, and growth. The study analyzes commonly used natural oils such as coconut oil, almond oil, castor oil, and herbal extracts, highlighting their nutritional components and therapeutic effects. Additionally, the report discusses the manufacturing process, quality control measures, and consumer preferences related to hair oil products. The findings suggest that regular use of properly formulated hair oil can enhance scalp condition, reduce hair fall, and protect hair from environmental damage. This report aims to provide a comprehensive understanding of hair oil as an essential cosmetic and personal care product.

Keywords: Herbal oils, Hair Loss, Hair Growth, Scalp health, Hair nourishment

1.Introduction: ^[1-3]

Hair has a several useful characteristics in the animal global. It forms a defensive cushion around the pinnacle & other sensitive elements of the frame. Hair oils are formulated to present the hair properly shine & gloss this is obtain by making use of a thin continuous movie of an oily material on the hair surface without causing stickiness. Many herbs are used in hair oil are Amla, Almond, Hibiscus, and so on. Hair oil has extra favoured as they promote hair growth. enhance beauty of hair & prevent hair fall. Hair is essential to human existence.

In India, the custom involves mixing different medications that promote hair growth with hair oils. The

preparations for hair oil are included to treat split ends, dandruff and other issues. Now a days hair loss and dandruff in hair is major problems associated with hair in both women and men's. Therefore, it has great importance to develop the new theories for the treatment of hair problems. Along with the good shampoo and conditioner, great hair oil completes hair care. The main purpose of hair oil preparations is to cool the scalp in order to promote luscious hair development in both men and women. Making an herbal hair oil using multiple herbal powders, Herbal juices and base oils involves a Decoction process that extracts the beneficial properties of the herbs into the oil. Here's a step-by-step procedure to create an effective herbal hair oil for hair loss, hair regrowth & powerful antidandruff.

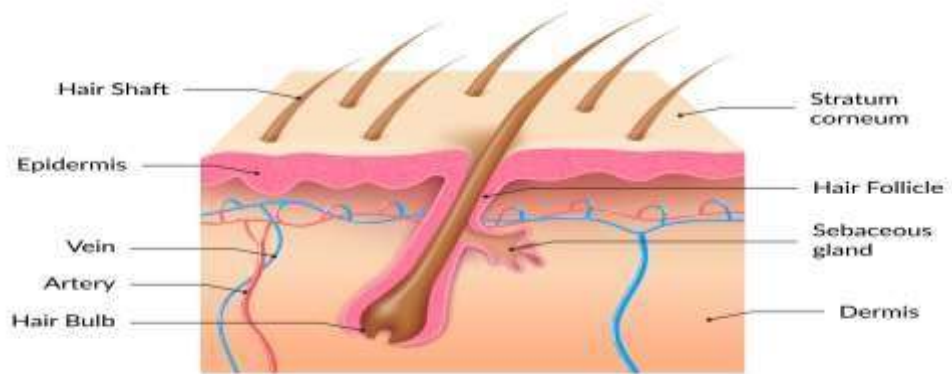


Fig 1: Structure of the Hair

2.Hair: [4,5,32,33]

Hair is one of the characteristics features of mammals and has various function such as protection against external factors i.e. heat, cold, etc. Hair is one of the important parts of body considered to be protective appendages on the body and Accessory structure of the integument along with Sebaceous gland and sweat gland.

2.1 Types of Hair: [34-40]

Hair type is primarily based on the curl pattern of the hair, which is determined by the hair follicle. Genetics play a key role in determining hair type. Andre Walker, who has been Oprah Winfrey's stylist for decades, is credited with creating a system that classifies hair into one of four curl patterns. Type 1: Straight

Type 2: Wavy

Type 3: Curly

Type 4: Coily

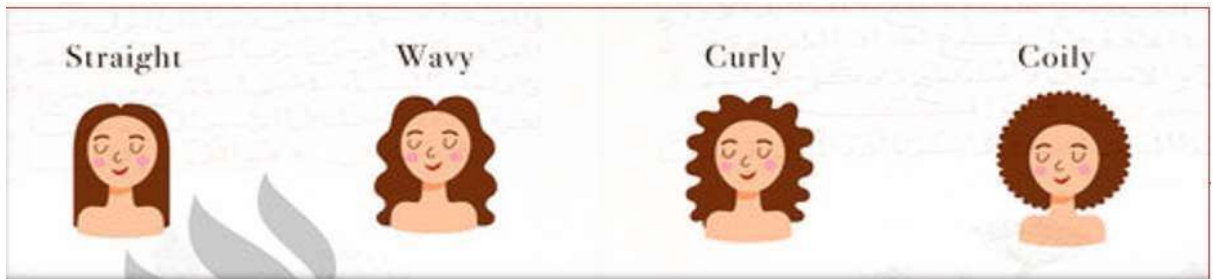


Fig 2: Type of Hairs

2.2 Hair Growth Cycle: [6,730,31]

Hair growth cycle consists of 3 stages -

1. Anagen stage (Growth)
2. Catagen stage (Transition)
3. telogen stage (Rest)

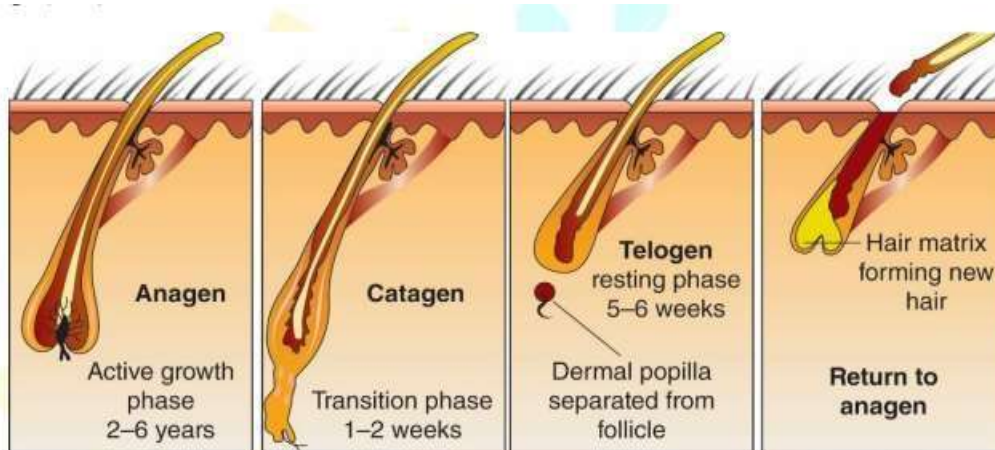


Fig 3: Hair growth cycle

- **Anagen phase: -**

The anagen phase is the growth phase of the hair. The Anagen phase will last from Between 2-6 years. A new hair pushes the new hair that stopped growing up and out of the follicle.

- **Catagen phase: -**

The catagen phase is a transitional stage and 3% of all hairs are in this phase at any given time. This phase lasts for 2-3 weeks.

- **Telogen phase: -**

The telogen phase is the resting phase which lasts for about 2-3 months. During the telogen phase, the hair follicle is at rest and the Club hair is completely formed.

Dermatologists utilize advanced techniques such as dermatoscopy and trichoscopy to identify specific findings. The objective of this study is to designed formulate and evaluate a herbal hair oil aimed at nourishing and fortifying hair, soothing the scalp, and stimulating hair growth. Following formulation, the herbal hair oil underwent comprehensive evaluation, considering factors including Physical appearance, Acid Value, pH, saponification value.

3.Hair Loss: [7,8,9,27,28]

Hair loss in humans occurs due to disruption of the normal hair growth cycle, follicular miniaturization, hormonal influence, genetic factors, or immune-mediated damage.

3.1 Types of hair loss: [9,10,11,26]

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

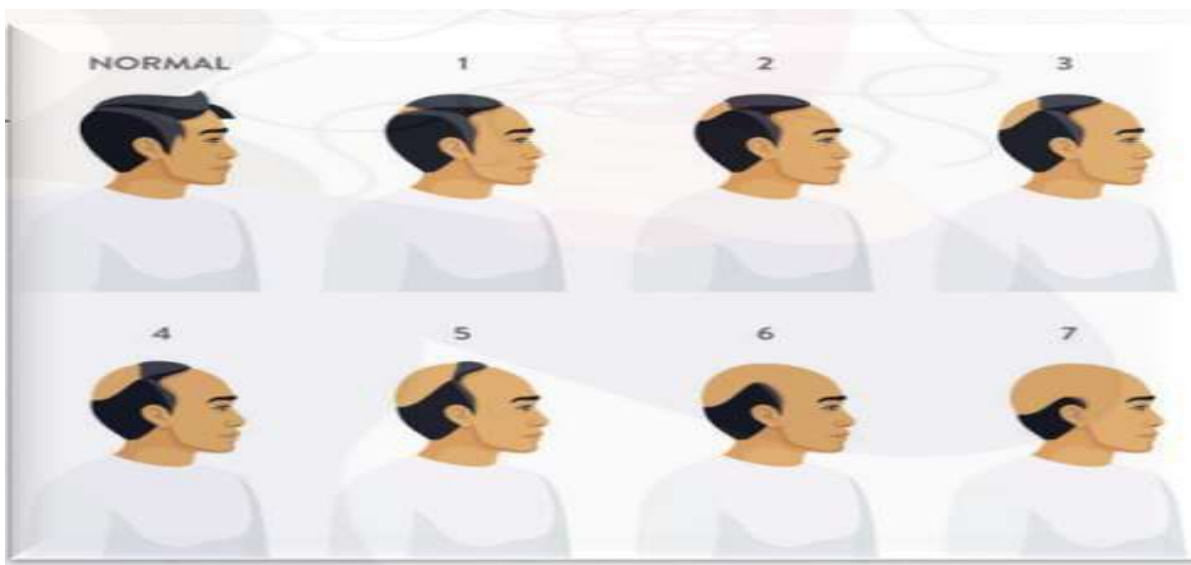


Fig 4: Hair Loss Process

4. History of Hair Oil: [12,13,14]

Hair oil has been used for personal care and grooming since ancient times. Across different cultures and civilizations, natural oils have played an important role in maintaining hair health, protecting the scalp, and enhancing beauty. The history of hair oil reflects traditional knowledge, cultural practices, and the evolution of cosmetic science.

4.1 Ancient Civilizations [15,23]

The use of hair oil can be traced back to ancient civilizations such as Egypt, Mesopotamia, and the Indus Valley. Ancient Egyptians used oils made from castor, almond, and moringa seeds to protect hair from dry weather and sun damage. Hair oil was also associated with religious rituals and social status.

In Mesopotamia, oils infused with herbs and fragrances were used for grooming hair and beards. Evidence from the Indus Valley Civilization suggests the use of plant-based oils for hair care and scalp massage.

4.2 Hair Oil in Ancient India [16,24,25]

India has a long and well-documented tradition of hair oiling. Ancient Ayurvedic texts describe the use of coconut, sesame, and mustard oils mixed with medicinal herbs such as amla, neem, brahmi, and bhringraj. Hair oiling was believed to promote hair growth, prevent hair loss, and improve overall health. Regular head massage with oil was also considered beneficial for relaxation and mental balance.

4.3 Greco-Roman and Middle Eastern Influence [17]

In ancient Greece and Rome, olive oil was widely used for hair and skin care. Perfumed oils were popular among the wealthy and symbolized luxury. In the Middle East, oils like argan and sesame oil were traditionally used for nourishment, cleanliness, and cultural practices.

4.4 Medieval to Early Modern Period [18]

During the medieval period, hair oil continued to be used, although availability depended on social class. In Asia and Africa, traditional herbal oiling practices remained common. By the 17th and 18th centuries, perfumed hair oils became fashionable in Europe, especially among the aristocracy.

4.5 Industrial Revolution and Modern Development [19,20,21]

The 19th century brought industrialization, allowing hair oils to be mass-produced. Mineral oils and commercially formulated products became widely available. In the 20th century, branded hair oils entered the global market, promoted through advertising and scientific research.

4.6 Contemporary Use ^[22]

Today, hair oil is an essential part of hair care worldwide. There is renewed interest in natural and herbal oils such as coconut, argan, castor, jojoba, and almond oil. Modern hair oils combine traditional ingredients with advanced formulations to suit different hair types and needs.

5.Hair Oil: [40,41]

Hair care products include hair oil. Hair care products are characterized as compositions intended to cleanse, alter the texture of hair, nourish the hair, and preserve the appearance of healthy hair (11). Hair oils are hair care products that are used to the hair to address conditions like baldness, graying hair, hair loss, and dry hair. They also aid in nourishing the hair (12). Due to the growing interest in herbal cosmetics among people, as well as the fact that their ingredients are readily available and their effectiveness is greater than that of their synthetic counterparts, herbal cosmetics are in high demand (13). A crucial component of herbal cosmetics is herbal hair oil. Herbal hair oil is increasingly widely utilized and preferred for many hair conditions (14). The use of hair oil is growing daily in tandem with people's rising standards of living. Herbal essences and scents are added to hair oil to give it natural flavors and colors.

5.1 Different types of herbal hair oil available in market:

- i Amla hair oil
- ii. Coconut hair oil iii. Bhringraj hair oil
- iv. Jasmine hair oil
- v. Brahmi hair oil
- vi. Cantharidine hair oil vii. Onion hair oil

5.2 Types of Hair Oil: -

Amla Hair Oil



Bhringraj Hair Oil



Coconut Hair Oil



Jasmine hair oil



Cantharidin hair oil



Brahmi hair oil



Onion hair oil



6. Herbs Profile:

6.1 Herbal ingredient, Mechanism of Action and Uses:^[42]

Herbal ingredient (Botanical Name)	Mechanism of Action	Uses in Hair Care
Coconut oil (Cocos nucifera)	Penetrates hair shaft due to low molecular weight; reduces protein loss; provides fatty acids	Prevents hair damage, improves hair strength, adds shine
Amla oil (Emblica officinalis)	Rich in vitamin C and antioxidants; strengthens hair follicles; reduces oxidative stress	Promotes hair growth, prevents premature greying, strengthens roots
Bhringraj oil (Eclipta alba)	Enhances blood circulation to scalp; prolongs anagen (growth) phase of hair cycle	Stimulates hair growth, reduces hair fall
Neem oil (Azadirachta indica)	Antimicrobial and antifungal activity; reduces scalp inflammation	Controls dandruff, treats scalp infections
Castor oil (Ricinus communis)	High ricinoleic acid content improves scalp circulation; moisturizes hair	Promotes hair growth, thickens hair, prevents dryness
Sesame oil (Sesamum indicum)	Acts as emollient; contains antioxidants (sesamol); protects hair from damage	Nourishes scalp, prevents hair breakage
Hibiscus oil (Hibiscus rosa-sinensis)	Contains amino acids and mucilage; strengthens keratin structure	Prevents hair fall, improves hair texture
Brahmi oil (Bacopa monnieri)	Improves scalp circulation; nourishes hair roots; antioxidant action	Reduces hair fall, strengthens hair follicles
Fenugreek oil (Trigonella foenumgraecum)	Rich in proteins and nicotinic acid; improves follicular nutrition	Controls dandruff, promotes hair growth
Aloe vera oil (Aloe barbadensis)	Moisturizing and anti-inflammatory; balances scalp pH	Reduces scalp irritation, conditions hair

Coconut Oil:^[43]



Fig 5: Coconut Oil

Common name: Coconut oil, *Cocos nucifera*

Scientific name: *Cocos nucifera*

Family: Arecaceae

Parts Used in Hair Oil: Oil from Endosperm.

Geographical Distribution: Tropical regions of India, Sri Lanka, Southeast Asia.

Active Constituents: Lauric acid, capric acid, myristic acid.

Mechanism of Action: Penetrates hair shaft; reduces protein loss, antimicrobial.

Uses: Nourishes hair, prevents hair damage, improves hair strength, adds shine.

Amla oil:^[44]



Fig 6: Amla oil

Common name: Indian gooseberry, Amla, Amalaki **Scientific name:** *Emblica officinalis*.

Family: Phyllanthaceae

Parts Used in Hair Oil: Fruit

Geographical Distribution: India, Southeast Asia

Active Constituents: Vitamin C, tannins, flavonoids

Mechanism of Action: Antioxidant action; strengthens hair follicles; delays greying.

Uses: Promotes hair growth, prevents premature greying, strengthens roots.

Bhringraj oil:^[45]



Fig 7: Bhringraj oil

Common name: Eclipta alba, Bhangra

Scientific name: Eclipta alba

Family: Asteraceae

Parts Used in Hair Oil: Whole plant.

Geographical Distribution: India, China, Thailand.

Active Constituents: Wedelolactone, ecliptine.

Mechanism of Action: Enhances blood circulation to scalp; prolongs anagen (growth) phase of hair cycle.

Uses: Stimulates hair growth, reduces hair fall.

Neem oil:^[46]



Fig 8: Neem oil

Common name: Neem, Indian lilac, Margosa

Scientific name: Azadirachta indica

Family: Meliaceae

Parts Used in Hair Oil: Seeds, leaves

Geographical Distribution: India, tropical regions

Active Constituents: Azadirachtin, nimbin, nimbidin

Mechanism of Action: Antimicrobial and antifungal activity; reduces scalp inflammation.

Uses: Controls dandruff, treats scalp infections.

Castor oil:^[47]



Fig 9: Castor oil

Common name: Castor oil

Scientific name: Ricinus communis

Family: Euphorbiaceae

Parts Used in Hair Oil: Seeds

Geographical Distribution: India, Africa, tropical regions

Active Constituents: Ricinoleic acid, triglycerides

Mechanism of Action: High ricinoleic acid content improves scalp circulation; moisturizes hair

Uses: Promotes hair growth, thickens hair, prevents dryness.

Sesame oil:^[48]



Fig 10: Sesame oil

Common name: Sesame oil

Scientific name: Sesamum indicum

Family: Pedaliaceae

Parts Used in Hair Oil: Seeds

Geographical Distribution: India, Africa, Asia

Active Constituents: Sesamol, sesamin, fatty acids

Mechanism of Action: Acts as emollient; contains antioxidants (sesamol); protects hair from damage.

Uses: Nourishes scalp, prevents hair breakage.

Hibiscus oil:^[49]



Fig 11: Hibiscus oil

Common name: Hibiscus oil

Scientific name: Hibiscus rosa-sinensis

Family: Malvaceae

Parts Used in Hair Oil: Flowers, leaves

Geographical Distribution: India, tropical region

Active Constituents: Flavonoids, anthocyanins, amino acids

Mechanism of Action: Contains amino acids and mucilage; strengthens keratin structure **Uses:** Prevents hair fall, improves hair texture

Brahmi oil:^[49]



Fig 12: Brahmi oil

Common name: Brahmi oil

Scientific name: Bacopa monnieri

Family: Plantaginaceae

Parts Used in Hair Oil: Whole plant

Geographical Distribution: India, wetlands of Asia

Active Constituents: Bacosides, alkaloids

Mechanism of Action: Improves scalp circulation; nourishes hair roots; antioxidant action.

Uses: Reduces hair fall, strengthens hair follicles.

Fenugreek oil: [47,49]



Fig 13: Fenugreek oil

Common name: Fenugreek oil

Scientific name: *Trigonella foenum-graecum*

Family: Fabaceae

Parts Used in Hair Oil: Seeds

Geographical Distribution: India, Mediterranean region

Active Constituents: Proteins, saponins, nicotinic acid

Mechanism of Action: Rich in proteins and nicotinic acid; improves follicular nutrition. **Uses:** Controls dandruff, promotes hair growth

Aloe vera oil: [43,49]



Fig 14: Aloe vera oil

Common name: Aloe vera oil

Scientific name: *Aloe barbadensis* Miller

Family: Asphodelaceae

Parts Used in Hair Oil: Leaves (gel)

Geographical Distribution: Africa, India, tropical regions

Active Constituents: Polysaccharides, vitamins, enzymes

Mechanism of Action: Moisturizing and anti-inflammatory; balances scalp pH **Uses:** Reduces scalp irritation, conditions hair

7. Conclusion:

The use of herbal hair oil in the cosmetic industry increases many folds in personal hygiene and health care systems. Hair is one of the most recognized hair treatments. The use of different herbal materials which are having different benefits with good combination will give the great effect for enhancing hair growth activity. It provides numerous essential nutrients required to maintain normal function of sebaceous gland and promote natural hair growth. The use of different benefits with good combination will give the great effect for hair. The herbal extracts and constituents chosen for formulation of hair oil were reported to have hair growth, its use in treatment of alopecia areata, scalp blood circulation, thickening of hair, reducing excess oiliness, anti-dandruff and shiny hair growth. The formulation was proven to be safe for human use. Hair oil formulation with good values of evaluation parameters shows similar beneficial effects in maintaining good hair growth of the hair, turning grey hairs to black, providing protection from dandruff and resulting in lustrous-looking hairs. Formulation was done and evaluated by means of various parameters like pH, greenish brown organoleptic properties (colour, odour, sedimentation), acid value, viscosity, saponification value, skin irritation test, volunteer study. At last, it can be concluded that the herbal oil formulation has significant quality. The formulated herbal oil provides many nourishing values to hair such as vitamins, minerals and essential oils. The review of herbal hair oil ingredients highlights the significant role of traditional medicinal plants in maintaining hair and scalp health. Herbs such as amla, coconut, neem, hibiscus, curry leaves, fenugreek, and Eclipta alba possess bioactive constituents including vitamins, flavonoids, fatty acids, alkaloids, and antioxidants that contribute to hair growth promotion, reduction of hair fall, prevention of premature greying, and control of dandruff. Compared to synthetic formulations, herbal hair oils offer better safety, biocompatibility, and long-term benefits with minimal side effects. Despite their wide traditional use, many marketed herbal hair oils lack proper standardization and scientific validation. Therefore, future research should focus on quality control, identification of active markers, and clinical evaluation to ensure efficacy and consistency. Overall, herbal hair oil ingredients present a promising, sustainable, and effective approach for hair care, supporting the growing global demand for natural and evidence-based cosmetic products.

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