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HERBAL HAIR OIL WITH HAIR DYE: ANOVERVIEW

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A B S T R A C T:

Soft, glossy, lustrous & bristling hair not only adds to beauty but moreover is an Indicator of wellbeing. Currently hair predicaments affect both men & women alike which may due to genes stress, hormonal fluctuation, chemical exposure, Improper diet, pollution etc. irregular hair care, stress, Since ages medicinal & aromatic herbs have been utilized by human as an essential hair care remedy. We incorporated coconut oil, Hibiscus flower & curry leaves. Hibiscus contains amino acids that can help to stimulate blood circulation in the scalp, which can encourage hair growth. Coconut oil is made up of about go% saturated fat & 9% unsaturated fat. Coconut oil is highest natural source of lauric acid which helps in hair growth. Curry leaves beneficial for hair because they are high in B-carotene of protein content, which are essential for hair loss & hair thinning prevention. The amino acid content of curry leaves is also high which, strengthens of hair fibre. Take Hibiscus flowers & grind them into a paste then Heat about a cup of coconut add a paste of flower. Let the mixture heat together & keep it aside to cool down & then extract is separated from it & Boil the curry leaves with two cups of water. Let the leaves cool of then grind it. Add an extract of coconut oil & Hibiscus flower to mixture for a hair growth.

Keywords: Herbal hair oil, dandruff, herbal, cosmetics, hair, hair dye.

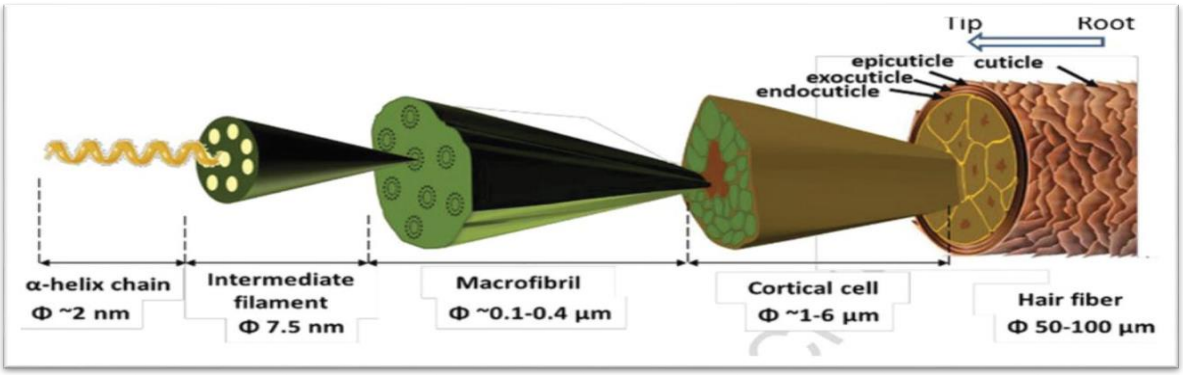
Introduction:

Hair is a keratinous filament emerging out of the epidermis. It is primarily made of dead, keratinized cells. Strands of hair originate from an epidermal penetration of the dermis called the hair follicle which facilitates hair growth [1]. In ancient texts like Ayurveda, hair loss is termed as “Khalitya” under the category of “Shiroroga” meaning disease of head and scalp. It described Shiro Abhyanga / head oiling under the concept of “Dinacharyas” and how it is of great significance than just a cosmetic habit [2]. The herbal hair oil augments these hair follicles to nurture and endorse the growth of hair. Hair oil preparation helps to overcome various hair problems like alopecia, greying of hair, split ends, dandruff, frizzy hair etc. Compendias called Charak Samhita and Sushrutha Samhitha provide insights into obtaining these medicinal herbal extracts, to notably diminish khalitya. Herbal hair oils are the formulations that are health-giving, provide strength, make hair flakes and seborrheic free. They mostly include amla oil, coconut oil, almond oil, olive oil, jojoba oil, sesame oil boiled along with powdered mixture of herbs[3].

Hair Fiber Structure:

The keratinocytes elongate, divide and relocate to the dermis [4]. Dermal fibroblasts then form a dermal papilla beneath the hair germ. This causes stimulation of the basal stem cells to up- regulate their cycle, producing cells that will keratinize and form the hair shaft [5]. The follicles develop from an ectodermal bud which invades the mesenchyme during embryonic development [6]. The mesoderm also condenses during the development creating an outer mesodermal

Fig.No.1 Hair Fiber Structure



component to the embedded part of the hair.

Hair follicle:

The hair follicle is where hair begins to grow and where it is held in place. It is a stocking-like structure that starts in the epidermis. It extends to the dermis. The follicle is lined by an inner and outer sheath that protects and molds the growing hair and ends just before the opening of sebaceous gland.

Hair shaft:

The hair shaft is the part of the hair that is made up of three layers of keratin. Those layers are

- The inner layer: - Also called as medulla. Depending on type of hair, the medulla is not always present.
- The middle layer: - This is called the cortex which makes the majority of the hair shaft.
- The outer layer: - Also called as cuticle, which is formed by tightly packed scales in an overlapping structure that resembles roof shingles.

Hair types:

Hair type is primarily based on hair's curl pattern. The amount of curl in the hair is determined by hair follicle. Hair type is determined by genetics. Andre Walker, known for decades as Oprah Winfrey's stylist, is credited with devising a system that classifies hair according to one of four curl patterns.

a) Type1:-Straight
b) Type2:-Wavy
c) Type3:-Curly
d) Type4:-Coily [18]

Hair Growth cycle

The growth of hair is cyclic phase divided into following- anagen (growth), catagen(involution) and telogen (rest) [7]. Pigmentation problems (Fading), dandruff and falling of hair (Shedding) are associated problems with hair [8]. The loss of hair is not life threatening, but has profound impact on social interactions [9]. There are no concord views on hair loss; it is quite controversial issue [10, 11].

Hair growth cycle:

Hair growth cycle consists of 3 stages

a) 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.

Figure No 2. Hair Growth Cycle

b) 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.

c) 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.

Factors affecting hair growth:

1 Hormonal
2 Nutrition
3 Temperature
4 Age
5 Exogenous chemical

Hormonal:

The impact of hormones on hair growth is evident through changes in the onset and length of the anagen phase, along with fluctuations in hair growth rate and thickness during this period. Concerning the duration of telogen and the loss of club hairs. The reactions in hair growth following removal of the endocrine glands and systemic hormone distribution vary across species. Seasonal moulting involves follicular changes that are photoperiodically influenced and connected to the reproductive cycle, and are thought to be governed by the neuroendocrine system, particularly in wild or primitive species. Photoperiodism influences the seasonal shedding of hair in domestic species, including non-equational bovine breeds, as well as the annual wool development cycle in improved sheep breeds.

Nutrition:

A poor nutritional state has been demonstrated to delay seasonal shedding in cattle and impede moulting in sub-adult and adult voles. In non-shedding sheep, like Merino, the effects of dietary plane are varied and extensive. Insufficient nutrition can impede follicle initiation and development in the foetus, negatively impact postnatal follicle maturation in lambs, and reduce fleece weight, fibre length, and fibre thickness in adult animals. However, nutrition must be very deficient before catagen and telogen can be nutritionally produced in the follicles of adult sheep. The nutritional composition of proteins, amino acids, carbs, fats, vitamins, and minerals can affect hair and wool growth in various ways, depending on the presence of excess or deficiency.

1.7.3 Temperature:

Temperature influences seasonal moulting. Low temperatures delay the spring moult in some wild species, are crucial for the development of a white winter coat in mountain hares, increase the density of winter pelage in wild species, boost the thickness of winter coats in cattle, and may stimulate wool growth in shorn sheep.

Age:

Ling (1970) investigated the effects of ageing on the pelage of various wild species. The maturation of adult fur in specific species requires multiple moults, and rarely, animals born late in the breeding season may forgo one of these moults. With advancing age, the patterns of adult moulting change. In mice, the subsequent hair waves demonstrate modified patterns and a reduction in frequency as they age. In non-shedding sheep, fleece weights reach their zenith at around 3.5 years of age and then decline alongside fibre length, but fibre thickness increases with age. The deterioration of staple crimp is more prevalent in older sheep, due to abnormal cell proliferation and cyst formation in the proximal outer root sheath of the follicles.

1.7.4 Exogenous chemical:

The primary effects of various exogenous chemicals on hair growth are alopecia and changes in pigmentation. Initiatives have been implemented to utilise chemically induced alopecia for the biological acquisition of wool and for the depilation of Angora rabbits. [21]

Hibiscus:

Figure No 3. Hibiscus

Botanical Name	**Rosa-sinensis**
Kingdom	Plantae
Order	Malvales
Family	Malavaceae
Genus	Hibiscus

Table No 1. Plant Taxonomy

Hibiscus flowers consist of cyanidin, Di-glucoside, flavonoids and vitamins, thiamine, riboflavin, niacin and ascorbic acid (vitamin C). Hibiscus being a rich source of flavonoids and amino acids provides the hair with various hair growths by activating dormant follicles. Micronutrients like fiber, protein, carbohydrate that stimulate. As it contains good amount of vitamin C, A and iron it exhibits antimicrobial and antioxidant property. This powdered herb is believed to be used in earlier times as anti-dandruff agent, and also to treat alopecia[12]. Additionally, amino acids help to enhance the production of keratin, a primary building block of
hair. According to Ayurveda, the reason for hair loss is extreme body heat, and hibiscus helps overcome the same due to its cooling action.
Hibiscus rosa-sinensis (Fam. Malvaceae) is widely grown as an ornamental plant throughout the tropical as well as subtropical regions of the world. Its flowers are large, generally red but different in other varieties. The plant has been used as a folk medicine in the orient for the cure of hematochezia, dysentery, obstruction due to wind phlegm, and vomiting of food. This plant is economically very essential owing to the herbal products and medicinal uses [13]. Each part of
H. rosa-sinensis contains a wider range of compounds. Phlobatannins, glycosides, saponins, flavonoids, terpenoids, thiamine, riboflavin and niacin reported in whole plant. The flowers are edible supplemented with nitrogen, fibers, calcium, phosphorus, and iron. The flower pigments report cyanidin-3,5-diglucoside, quercetin-3,5-diglucoside along with kaempferol-3- xylosylglucoside[14]. Other pharmacological important flavonoids B-sitosterol, teraxeryl acetate, and malvalic acids were also found in stems and leaves [15]. H. rosa-sinensis were shown to have antimicrobial activities against Pseudomonas aeruginosa, Escherichia coli, Enterobacter aerogenes, and Streptococcus pyogenes. These microorganisms caused skin infection [16]. In other study antimicrobial action of cardiac glycosides, anthraquinones, and phlobatanins were observed against Bacillus subtilis, E. coli and S. aureus. Pathogenic microorganisms are getting resistant to current antimicrobial agents, scientific research has continued to search for other sources of antimicrobial compounds/cosmetic products made from flowers and leaves extract that can be used as vital antibiotics components against different skin diseases.

Role:

1. Stops hair loss
2. Prevent premature graying
3. Thicken hair and add volume
4. Treat dandruff [17]

Hair Oil:

Hair oils are preparations employed for the prevention and treatment of alopecia and other hair-related disorders. They also promote the lavish growth of hair. Herbal-infused hair oil functions as a hair tonic. Hair care products are categorised into two main types: hair tonics and hair grooming aids. These are primarily extracts of therapeutic herbs in an oil base. A variety of plants have been employed for hair treatments. The herbs include amla, henna, neem, methi, lemon, tulsi, brahmi, shikakai, reetha, mahabhringraj, jantamasi, marigold, hibiscus, nutmeg, parsley, rosemary, and thyme. Minoxidil, a synthetic drug, is an effective vasodilator that appears to be safe for prolonged usage. After five years of utilising 2% and 3% topical minoxidil, the peak improvement in hair regrowth occurs at one year, followed by a progressive decline in effectiveness in the subsequent years. The extended use of minoxidil lotion may result in localised harmful effects. The market analysis of crude medicines employed in herbal hair oils offers direction for ingredient selection in hair oil formulations. This study is to evaluate the hair growth efficacy of herbal formulations utilising oil extracts of all designated components at different dosages. Contemporary multi-ingredient hair oils are created and assessed to validate conventional claims regarding their effectiveness in stimulating hair growth. Amla is rich in vitamin C, tannins, and minerals such as phosphorus, iron, and calcium, which nourish hair and promote its darkening. Hibiscus comprises calcium, phosphorus, iron, vitamin B1, riboflavin, niacin, and vitamin C, which are employed to enhance hair density and prevent premature greying. Brahmi contains alkaloids that enhance protein kinase activity. Methi is a protein-rich feed that provides vital nutritional support for hair. Various processes are available for the preparation of hair oils: the direct boiling method, the paste method, and the cloth method. After preparation, the next key process is the evaluation of the preparation. The third phase involves evaluating its therapeutic efficacy.

3.1 Herbal hair oil:

Hair is a crucial element of the body and influences an individual's overall appearance. Hair care products are defined as formulations employed for cleansing, adjusting hair texture, modifying colour, rejuvenating damaged hair, nourishing hair, and improving its healthy appearance. Hair care products are categorised into two types: hair tonics and hair grooming aids. Hair oils infused with herbal ingredients are termed hair tonics. These consist of botanical extracts in an oil base. Hair oils are formulations employed for the therapy of hair ailments, including alopecia, hair damage, discolouration, hair loss, and dryness. The properties of oil are non-adhesive, and the addition of scents enhances its scent, so increasing its allure. The proper application of hair oil imparts shine, boosts smoothness, promotes manageability, and, most significantly, has a cooling effect on the scalp. Herbal hair oils are highly esteemed hair care products; they moisturise the scalp and are advantageous for dry scalp and hair. Herbal hair oil supports the normal functioning of the sebaceous glands by supplying essential components required for natural hair development. Twenty

Different types of herbal hair oil available in market:

1. Amla hair oil
2. Coconut hair oil
3. Bhringraj hair oil
4. Jasmine hair oil
5. Brahmi hair oil
6. Cantharidine hair oil
7. Onion hair oil

Benefits:

We live in polluted world which is not hair friendly. That is when herbal hair oil comes into practice. Herbal oil is a blend of bhringraj, jatamansi, amla, hibiscus, rosemary, almond and other herbs. Their benefits are as follow:

1. It provides natural goodness to hair. Herbal oil contains vitamins and micro nutrients which act as a food for hair.
2. Hair oil helps in preventing hair loss and tames frizzy hair. Hair ends need special care and herbal oil pampers them throughout their nourishment.
3. Regular use of hair oil cures problem of premature gray hair.
4. Keeps the scalp hydrated.
5. Improves hair growth.
6. Prevents dandruff.
7. Offers shine glow.
8. Stress relief.[22]

Different herbs used are as follows:

S.NO	**BOTANICALNAME**	**COMMON NAME**	**FAMILY**	**CHEMICAL CONSTITUENTS**
1	*Ecliptaprostrate*	Bhringraj	Asteraceae	Alkaloids, Flavanoids, Terpenoids
2	*PhyllathusEmblica*	Amla	Phyllanthaceae	Ascorbic acid, Ellagic acid, Gallicacid
3	*Ocimumtenuiflorum*	Tulsi	Lamiaceae	Eugenol, Linalool, Carvacrol.
4	*Senegaliaruguta*	Shikakai	Fabaceae	Alkaloids, Tartaric acid, Citric acid.
5	*Rosa-sinensis*	Hibiscus	Malvaceae	Polyphenols, Anthocyanins

6	*Cocosnucifera*	Coconut	Arecaceae	Lauric acid, Mristic acid, Caprylic acid
7	*Azadirachtaindica*	Neem	Meliaceae	Nimbin, Salannin
8	*Alliumcepa*	Onion	Amaryllidaceae	Methanol, Acetic acid
9	*Aloevera*	Alovera	Aphodelaceae	Chromone, Anthraquinone
10	*Asparagusracemosus*	Shatavari	Asparagaceae	Mucilage, Alkaloids.
11	*Bacopamonnieri*	Brahmi	Plantaginaceae	Bacosides
12	*Chrysopogon zizanioides*	Vetiver	Poaceae	Vetiverol, Vetivone, Benzoic Acid
13	*Lawsoniainermis*	Henna	Lythraceae	Lawsone, Anthroquinones, Glycosides
14	*Glycyrrhizaglabra*	Liquorice	Fabaceae	Glabridin, Enoxolone
15	*Nardostachysjatamansi*	Jatamansi	Caprifoliaceae	Maaliol, seychellene

Coconut oil:

Figure No 4.Coconut Oil

Botanical name	**Coco snucifera**
Kingdom	Plantae
Order	Arecales
Family	Arecaceae
Genus	Cocos
Species	C. nucifera

Table No 2. Plant Taxonomy

It consists of triglycerides of lauric and myristic acids. Along with small portions of caproic, caprylic, oleic, palmitic and stearic acids, fatty acids in coconut oil reduce sebum. Auric acid and acrylic acid in coconut help stop prevent bacterial and viral infections [18]. It has been used as moisturizer for both skin and hair [19] that makes healthy looking tresses. These enormous benefits take the formula up a notch. One of the advantages of coconut oil is its resistance to oxidation and polymerization, which makes it stable oil for cooking. For example, it is suitable for single-use shallow frying, although it is not recommended for continuous deep-fat frying because of its low smoke point, which may lead to the production of potentially carcinogenic substances upon overheating [20]. Because of its high content of saturated fatty acids (92%), coconut oil has always been classified, along with butter, palm oil, and animal fats, as a source of

saturated fat to be consumed at low levels in the diet. In recent years, numerous claims on websites and in the commercial literature have likened coconut oil to medium-chain triglycerides', asserting that it behaves atypically compared with other foods high in saturated fat and is beneficial for human health [21]. Research on manufactured medium-chain triglycerides in the literature cannot be applied to coconut oil because the triglycerides predominant in coconut oil are different in their structure, absorption, and metabolism.

Role:

1. Masks hair
2. Moisturizes hair
3. Seals hair
4. Makes hair look shinier.

Curry Leaves:

Figure No 5. Curry Leaves

Botanical name	Murraya koenigii
Kingdom	Plantae
Order	Sapindales
Family	Rutaceae

Genus	Murraya
Species	M. koenigii

Table No 3. Plant Taxonomy

Curry leaves are commonly known as 'Kadi Patta'. It is one of the most common household ingredients which are easily found in most Indian kitchens. Curry leaves are loaded with properties that can work wonders for your hair and lead to hair growth. They are rich in antioxidants and proteins; these antioxidants neutralize the free radicals and keep your hair healthy and strong. It can be your inexpensive method to fight the hair problems that you can prepare at your home. Here are some ways to use curry leaves for hair growth. But before you follow these ways, do a patch test for your safety, as your skin might be allergic to curry leaves' paste. Curry leaf (Murrayakoenigii) belongs to the family Rutaceae, consisting of 150 genera and 1600 species. It is found to be native to South Asia, particularly India, Sri Lanka, and Bangladesh. The use of Murrayakoenigii dates back to 1 and 4th century AD. Tamil and Kannada literature describes Murrayakoenigii as Kari used as a flavoring agent. It is considered one of the important ingredients in South Asian cuisine for its fragrance and aroma. It maintains its flavor and other qualities even after drying, making it a popular spice and condiment in tropical countries. The leading components for flavor and aroma of curry leaf include pinene, sabinene, caryophyllene, cardinol, and cardinene.

The whole plant is regarded as. Murraya koenigii has been found to have bioactive phytochemicals like alkaloids, essential oils, phenolics, minerals and proteins, terpenoids, tocopherol, β-carotene and lutein. Murrayakoenigii is distributed in the moist forests of Asian regions, particularly Nepal, Bhutan, Laos, Pakistan, Thailand and cultivated all over India. It is rarely observed outside the Indian sphere of influence. Herbal drugs are highly effective with minimum side effects and are to be used extensively in treating various diseases, and they are relatively low. This review explains the different uses and potentials of curry leaf [23].

Role:

1. Cures scalp problems
2. Makes lustrous and healthy hair
3. Promotes thicker, stronger hair growth
4. Prevents premature greying
5. Cooling and soothing effect

Uses:

1. Use to prevent hair loss, hair thinning, premature greying of hair, and hair damage.
2. Use to strengthen the hair and retain shine in the hair.
3. Use to promote hair growth and anti-hair fall [24].

Treatment:

- Herbal oil/emulsion.

Method of Preparation:

Take hibiscus flowers and grind them into a paste; then heat about a cup of coconut oil and add a paste of the flower. Let the mixture heat together and keep it aside to cool down, and then extract is separated from it. Boil the curry leaves with two cups of water. Let the leaves cool and then grind it. Add an extract of coconut oil and hibiscus flower to the mixture for hair growth.

Mode of Action:

1. Stimulating hair follicles: Hibiscus flowers contain amino acids that nourish hair follicles and stimulate new hair growth.
2. Improving blood circulation: Hibiscus flowers contain flavonoids that improve blood circulation to the hair follicles.
3. Hydrating hair: Coconut oil hydrates hair and prevents breakage.
4. Strengthening hair: Coconut oil can strengthen hair and improve its texture, shine, and manageability.
5. Reducing dandruff: Hibiscus can help with dandruff and an itchy scalp.

Conclusion:

Overall, herbal oil provides a lot of nutritious foods to the Hairs such as vitamins, minerals, etc. They are useful to prevent hair damage and loss caused by pollution and dull hair: also provides alternative sources from hazardous chemicals. The herbal hair dye and oil formulation are evaluated for various parameters like color, viscosity, specific gravity, pH, acid value, and saponification value, refractive index.

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