

Alopecia Therapy: A systemic review on herbal oils used for the treatment of hair loss

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ABSTRACT

The medical term for hair loss or baldness is alopecia. It is a medical condition that causes hair loss in some or all areas of the body, most commonly the scalp. Hair loss can be caused by a variety of factors, including genetic tendencies, environmental triggers, chemical exposure, medicine, nutritional deficiency, extreme stress, or a long illness, among others. Alopecia is divided into several categories based on the pattern and causes of hair loss. To treat the condition of hair loss (alopecia), treatments are available in both natural and synthetic forms; however, natural products are gaining popularity due to fewer side effects and better formulation strategies for natural product extracts. Plants have been used to promote hair growth since ancient times, according to Ayurveda, Chinese, and Unani medical systems. Minoxidil and finasteride, which have been approved by the FDA, remain our preferred retailers in the treatment of hair loss. Erythema, scaling, pruritis, dermatitis, itching, and other side effects have been linked to the use of these synthetic compounds. So, to deal with the problem of hair loss, we looked into Nature's treasures, which have been used as a form of herbal oil or extracts since ancient times. This article provides a comprehensive overview of herbal oils or extracts used to treat hair loss (alopecia).^[1-7]

Keywords: Hair loss, Alopecia, Herbal cosmetic, Herbal formulation, Ayurveda, Herbal oils/extracts

I. INTRODUCTION

Hairs can be defined as "improved epithelial structure formed as a result of keratinization of germinative cells," hairs are the outgrowths from the follicles present on the skin. Hair is composed of keratin with chemical constituents such as Carbon (C), Nitrogen (N), Sulphur(S), & Oxygen (O). Hair grows at a different rate for each person, but on average, hair grows 15-30 mm per month. Hair is a vital part of the body that is derived from the ectoderm of the skin and serves as a protective appendage on the body. Vellus hair and Terminal hair are the two types of hair. Vellus hairs are light-colored, straight, and fine. On the region of the eyelashes and eyebrows, terminal hair is thicker, darker, and may be curly. Hair loss of 70-100 hairs per day is very common; however, hair loss of more than 100 hairs per day for more than a couple of weeks indicates a serious problem. Alopecia, a dermatological disorder that has been recognised for more than 2000 years is a common problem in cosmetic as well as primary health care practises. It is widespread throughout the world, affecting between 0.2 percent and 2% of the global population. Various synthetic medicines for hair loss are available, but they do not treat hair loss permanently and have serious side effects. Herbal medicines may be able to help with these issues.^[1-2]

Hair loss is a condition in which hair falls out from areas of the skin where it is normally found, such as the scalp and the body. This loss obstructs the hair's many biological functions, including sun protection (primarily for the scalp) and sweat gland product dispersal. Patients with hair loss suffer greatly because hair cover to the scalp is psychologically important in our society. Alopecia is the most common hair disorder, and it is used to describe the patterned loss of scalp hair in genetically vulnerable men and women. Hair plays an important role in mammals' thermal insulation as well as social and sexual communication, both visually and by dispersing scents secreted by skin glands. Humans are relatively hairless in comparison to other species, and human hair is not known to be important for species survival. It is, however, still a valuable cosmetic asset. Though hair loss (alopecia) is not a debilitating or life-threatening condition, the prospect of going bald can cause emotional distress and a traumatic experience for those who experience it prematurely or excessively. Hair enhances a person's appearance and personality. Today, everyone is wary of taking a second look. Hair fall is normal because the old hair is replaced by new hair growth. If you have a lot of hair loss, you should get help. The article reviews a number of studies that show the efficacy of herbal drugs or isolated compounds in promoting hair growth. The mechanism of action of herbal drugs in preventing hair loss or promoting hair growth is also described.

Classification of hair loss (Alopecia):

- a) Alopecia Areata (prime stage): Alopecia areata is a common autoimmune disease that results in the loss of hair on the scalp and elsewhere. It usually starts with one or more small, round, non-scarring smooth patches. It affects 1% western conditions.
Mild Brief Alopecia Areata- Patient with repeated transient alopecia areata but never converts into alopecia totalis or universalis.
- b) Temporary Alopecia Areata: Patient with Alopecia areata in advanced phase and some of them converts into Alopecia totalis/Alopecia universalis.
- c) Ophiasis Alopecia Areata: Ophiasis type of alopecia areata shows a band like hair loss. It occurs generally in the progressive or the occipital areas of the scalp, and therefore it is more difficult to treat, as most medicines have a delayed action on these areas.
- d) Diffuse Alopecia: Unnecessary Loss of hair all over the scalp without creating a reinforcement.
Hair loss due to side effect of the beauty treatments- Any beauty treatments like hair colours, dye, straightening, softening, rebounding, perming etc., which contains harsh chemicals can trigger hair loss for some individuals.
Telogen effluvium (TE) and chronic telogen effluvium- (CTE) Dietary lacks, Crash dieting High grade fever, Anaemia, Blood loss, Hormonal imbalance and pregnancy etc. can cause telogen effluvium type of hair loss telogen word is known for latent phase of the hair and fluvium means.
- e) Alopecia Totalis: Loss of hair from whole Scalp.
- f) Alopecia Universalis: Loss of hair from entire body including eyebrows and eyelashes Scar ring Alopecia Any inflammatory process (burns, bacterial infections, ringworm, injury) necessary to cause permanent loss of follicles, affected area known as Scarring alopecia.
- g) Trichotillomania: This type of hair loss is known as compulsive pulling or dull self-pulling by a patient Himself or herself.
- h) Traction Alopecia: Hair elegance that tie hairs so tight can causes much traction at the root of hairs, and can develop adhesion alopecia.
- i) Chemotherapy and hair loss: Chemotherapy is exclusive behaviour for cancer patients but it marks normal cells and hair follicles too. This causes hair loss and known as anagen effluvium type of alopecia.^[3]

Hair growth cycle:

The anagen phase, followed by the catagen and telogen phases, is a tedious cycle for hair growth. The hair is actively growing in the anagen phase, while the catagen phase is marked by the degeneration and resorption of the lower region of the hair follicle. The telogen phase, during which the hair is dormant, is followed by the growth of the hair follicle in the scalp. A hair growth cycle has three main phases: anagen, catagen, and telogen. The anagen phase of the growth cycle lasts about 3-5 years on average. There are approximately 1,000,000 hairs on a healthy scalp, and 90% of the follicles are constantly in the anagen phase of hair growth. When a follicle reaches the end of its growth period, it enters the catagen stage. The telogen stage is a 3- to 4-month dormant or resting period. An old hair falls out when the dormant phase ends. After that, the hair follicle returns to the anagen stage, and new hair begins to grow. Hair grows at a rate of about half an inch per month on average, depending on hair follicles and age. In a normal hair growth cycle, 50-60 scalp hairs are lost daily on average, and new hairs begin to grow from these follicles. When less new hair enters the re-growth stage, hair loss begins.^[3]

Factors of Hair loss:

Several factor of hair loss are:

1. Acute illness
2. Autoimmune disorders
3. Chemicals (hair dyes)
4. Chemotherapeutic agents/ drugs.
5. Diabetes
6. Hair loss following childbirth
7. Hair styling products
8. Hair styling techniques
9. High iron deficiency
10. Nutritional deficiencies
11. Other fungal infections
12. Physical trauma to the scalp
13. Poisons
14. Poor blood circulation
15. Poor diet or malnutrition
16. Prescription drugs
17. Psychological
18. Radiation exposure

19. Ringworm
20. Skin disease
21. Stress
22. Sudden weight loss
23. Surgery
24. Thyroid disease.

Herbal Cosmetics, also referred as Products, are formulated with a variety of permissible cosmetic ingredients to form the base, and one or more herbal ingredients are used to provide defined cosmetic benefits only. Herbal medicines are becoming increasingly popular due to their lack of side effects. The best part about herbal cosmetics is that they are made entirely of herbs and shrubs. The natural content of the herbs has no negative effects on the human body; rather, it enriches it with nutrients and other beneficial minerals. European Directives 93/35/EEC (European Commission), defined cosmetic products, as any substance or preparation intended to be placed in contact with the various external parts of the human body (epidermis, hair system, nails, lips and external genital organs) or with the teeth and the mucous membranes of the oral cavity with a view exclusively or mainly to cleaning them, perfuming them, changing their appearance and/or correcting body odours and/or protecting them or keeping them in good condition. However, there is mounting scientific evidence that plants have a vast and complex arsenal of active ingredients (photochemical) that can actively restore, heal, and protect the skin in addition to calming and smoothing it. Cosmeceuticals are topical cosmetic—pharmaceutical hybrids intended to enhance health and beauty through ingredients that influence the skin's biological function. The various topical application products that delay and/or reverse visible signs of ageing are termed anti-ageing cosmeceuticals. Research trends in anti-ageing skin care products are moving towards developing new plant extracts and botanical ingredients based on their traditional medicinal uses. Ayurveda is one of the most ancient medical traditions practiced in India, Sri Lanka and other South Asian countries have a sound philosophical and experiential basis. Atharvaveda, Charak Samhita and Sushruta Samhita are its main classics, giving detailed descriptions of over 700 herbs. Ayurveda has several formulations for management of aging and related conditions. Its literature describes over 200 herbs, minerals and fats to maintain and enhance the health and beauty of the skin. [3-4]

II. HAIR LOSS IN AYURVEDIC LITERATURES

In Ayurveda Hair fall or loss of hair termed as *Khalitya*. Ayurveda is the traditional medicinal system of India and believed to have originated over 6000 years ago. It describes the ways to remain healthy as well as methods to treat disease. The name itself means “Knowledge (Veda) of life (Ayu)”. In Ayurveda, hair is considered as a by-product of bone formation. The tissue responsible for building bones is also responsible for the growth of hair. Ayurvedic practitioners believe that early hair loss is related to the body type and the balance of the mind-body constitution (doshas). Acharya Sushruta classified hair loss under the *Kshudraroga* and Acharya Vagbhata under the *Shiroroga*. According to modern medicine hair fall is also known as *Alopecia* or baldness which refer to partial or complete loss of hair especially from the scalp. The incidence of “*Khalitya*” (Hair fall) is increasing day by day. Changing lifestyle, unhealthy dietary habits, sleep disturbances, systemic diseases, medications and stressful life also contribute to it. Hair loss affects millions of people around the world. According to a survey, up to 40% of men and 25% of women in India are affected by hair loss. Hair loss is now a common occurrence in children and teenagers. *Khalitya* is primarily a Pitta dominant *Tridoshjanya Vyadhi* i.e., Vata, Pitta, Kapha with Rakta dosha. Vitiated Pitta i.e., *Bhrajaka Pitta* along with vitiated Vata leads to weakening or withering of the hair from the hair roots. Vitiated Kapha along with Rakta obstruct the hair roots (*Romakūpa*) which prevent further growth of hair. Pitta individuals, and those who have excess pitta in their system, are likely to lose their hair early in life, or have prematurely thin or grey hair. Excess pitta in the sebaceous gland, at the root of the hair, or folliculitis can make the person start losing hair. [5-6]

Ayurveda has described hair disease in three Sanskrit terms in Charak Samhita in Sanskrit text:

1. *Khalitya* (*Alopecia*): Means loss of hairs
2. *Palitya* (*Premature grey hair and cavities*): Means premature hair greying
3. *Indralupta* (*Baldness*): Means alopecia areata, totalis, universalis.

There's various plant used for hair growth mentioned in the Ayurvedic Pharmacopoeia of India. These plants are defined under a common term known as “*Kesya Rasayana*”. In ayurvedic literature, there are records of herb which promote the growth of hair, keep them soft and silky and do not allow them to turn grey at an early-stage herbs like Arnica, Henna, Bringraj, Jatamansi, Shoe flower, Bahera, Ghrit Kumari, Shikakai, Amla, Motha, Bhrami etc. have been widely used by the traditional communities as a hair wash, hair dye, hair growth oil formulation and shampoo. These are found to be priceless in treating a variety of hair issues such as hair loss, hair growth, baldness, lice problems, dandruff, and itching, as well as being useful as a hair tone, hair dye, and hair wash. Such kind of information may give a lead for constructing herbal formulations extra.

III. HERBAL EXTRACT/OIL FOR THE TREATMENT OF HAIR LOSS

Despite the overwhelming influence and our reliance on modern treatment and large advances in synthetic drug, herbal treatment continues to be the mainstay of about 70-80 percent of the world's population in general in developing countries for primary health care due to better cultural acceptability and compatibility. Natural drug treatments are for this reason a priceless as good as a valuable present from nature. They were handled with care and admire in the early days. The future pattern is more in the direction of the whole thing “Natural” and it might be valuable looking into the plant world for ultra-modern medicine.

There are a variety of plants and extracts used in different parts of the world for hair care that promote hair growth, as well as a variety of herbal products that promote hair growth. Many poly-herbal mixtures are used as hair tonics, hair growth promoters, hair conditioners, hair cleansing agents, anti-dandruff agents, and treatments for alopecia and lice infection all over the world. To deal with the problem of hair loss, we looked into Nature's treasure and discovered a number of herbs that have been shown to be effective in the treatment of alopecia. Because they are natural drugs, they have a number of advantages, including patient compliance, fewer side effects, and multiple modes of action for the treatment of alopecia.^[7] The herbs used in the treatment of alopecia provide one of the following:

1. Nutritional support
2. DHT blockers and 5- α -Reductase blockers.
3. Aromatherapy and improved scalp blood circulation.

Nutritional Support: Calcium, iron, copper, chromium, iodine, zinc, and magnesium are all required minerals for healthy hair growth. Mineral deficiency reduces the ability to regulate blood circulation, which promotes healthy hair growth, as well as thyroid hormones, which prevent dry hair, hair loss, and colour defects. Your body will become toxic if you consume too much iron.

DHT blockers and 5- α -Reductase blockers: After knowing the well-established role of DHT in hair loss, it is recommended that the use of herbs that have pronounced DHT or 5- α -Reductase blocking activity can be used for the treatment of Alopecia (especially Androgenetic). There are some herbs that have proved DHT blocking activity like *Pygeum africanum*, *Senecio repens*, *Urtica dioica* and others with potential 5- α -Reductase inhibiting ability like *Camellia sinensis*, *Panax ginseng* etc.

Aromatherapy: Aromatherapy can be used as a supplement to treat alopecia. It uses highly concentrated extracts which are derived from the flowers, leaves, bark and the roots of various plants like *Arnica montana*, *Cedrus atlantica*, *Lavandula agustifolia*, *Oscimum sanctum*, *Pilocarpus jaborondi*, *Rosmarinus officinalis*, *Thyme vulgaris* etc., Essential oils enter the body through the olfactory system (inhalation) and/or through the skin in aromatherapy. Essential oils, like herbs taken orally, reach the circulatory system (blood), where they bind to receptors and alter the chemical composition. These oils not only strengthen/calm the nervous system on a cellular level, but also on a spiritual level, providing a sense of well-being. Topical herbal therapy stimulates hair follicles and has been shown to be the safest way to deal with various types of hair loss (alopecia), though the exact pharmacological actions of these herbs and oils are unknown.^[7-8] Some of the traditionally used herbs extracts or oil used for hair growth promoting activity are described below:

1. *Rosa-sinensis* Linn (HRS) (Hibiscus oil)



Fig: 1 Plant of *Rosa-sinensis* Linn (HRS)

Hibiscus rosa-sinensis Linn (HRS) (family: *malvaceous*) is accepted that the whole part of HRS such as stem, roots, flower, and leaves had been used as traditional and folklore medicine. The flowers are commonly used in herbal

teas and food colouring, and they are also eaten as salad or pickles in some countries. This demonstrates that this plant is not harmful to our bodies and is completely safe to consume. Because of their antioxidant, anti-tyrosinase, and anti-bacterial properties, the leaves have been used in healing processes. *Hibiscus rosa sinensis* Linn is a glabrous shrub with a variety of flower colours that is widely cultivated as an ornamental plant in the tropics. The leaves and flowers aid in the healing of ulcers and promote hair growth. It contains taraxeryl acetate, beta-sitosterol, camosterol, stigmasterol, ergosterol, flavonoids, glycosides, lipids, citric and oxalic acids, as well as flavonoids, glycosides, lipids, citric and oxalic acids. Formulation containing *Eclipta alba* Hassk, *Hibiscus rosa sinensis* Linn, *Nardostachys Jatamansi* have excellent hair growth promoting activity, they mainly act by an enlargement of follicular size and a prolongation of the anagen phase. [9-10]

2. *Allium sativum* L. (Garlic extract oil)



Fig: 2 Plant of *Allium sativum* L

Garlic is used all over the world for different diseases. Garlic was used as a remedy in Traditional Iranian Medicine (TIM) for a variety of ailments, including infections, cancers, injuries, gastrointestinal problems, and cardiovascular diseases. According to some studies, alopecia areata is characterised by an autoimmune attack on the hair follicle, resulting in hair loss. Garlic's immune-modulating properties could explain its efficacy in alopecia areata. Onion and garlic are both members of the *Asparagus* family of vegetables. Diallyl disulphide is present in both of them, which may contribute to their therapeutic effects. Though various treatment modalities, both local and systemic, have been used to induce hair regrowth, each has its own set of complications and efficacy. Garlic (*Allium sativum*) belongs to the *Allium* genus along with onions, scallions, shallots, leeks, and chives. These plants produce organosulfur compounds, which have antimicrobial, immunomodulatory and anti-inflammatory effects. [11]

3. *Juglans regia* L. (Walnut oil)



Fig: 3 Plant of *Juglans regia* L.

The tree belonging to the *Juglandaceae* family with the genus *Juglan*. Each nut is roughly spherical in its shape and its size is about a middle-sized lemon which weighs about 10-15 grams. It has a single edible bi-lobed kernel inside. The walnut kernel is made up of two uneven lobes that are off white in colour and covered in a light brown papery layer. Apart from their delicious taste, walnuts are high in various nutrients and thus contribute significantly to human health. The omega 3- fatty acid is the most important component in walnuts. Walnuts are the most hair-friendly of all nuts, owing to their high omega-3 fatty acid content, as well as zinc, iron, B vitamins (B1, B6, and B9), and high protein content. These nuts can help your hair in the following ways. Omega-3 fatty acids in walnut oil form a vital part of cell structure as they stop dehydration of cells and maintain the physical property. In this way, walnut oil hydrates your scalp, thus preventing dry scalp which is a cause of hair loss. ^[12]

4. *Helianthus annuus L. (Sunflower oil)*



Fig: 4 Plant of *Helianthus annuus L.*

The common sunflower (*Helianthus annuus L.*) is a species of the *Asteraceae* family grown commercially worldwide offering a variety of nutritional and medicinal benefits. It is the non-volatile oil expressed from sunflower seeds. Sunflower oil contains lecithin, tocopherols, carotenoids and waxes. In cosmetics, it has smoothing properties and is considered noncomedogenic. The sunflower seed, although used as a snack, salad garnish, and in some bakery goods, is primarily harvested for oil production, ranking in 4th position at world level after palm (29%), soybean (22%) and oilseed rape (13%). The phenolic compounds, flavonoids, polyunsaturated fatty acids, and vitamins found in sunflower seeds and sprouts provide valuable antioxidant, antimicrobial, anti-inflammatory, antihypertensive, wound-healing, and cardiovascular benefits. It's used in ethnomedicine to treat heart disease, bronchial, laryngeal, and pulmonary infections, coughs and colds, and whooping cough, among other ailments. ^[13]

5. *Emblica officinalis (Amla oil)*



Fig: 5 Plant of *Emblica officinalis*

Amla is obtained from the plant *Emblica officinalis*, Family *Euphorbiaceae*. Amla is high in vitamin C, tannins, and minerals like phosphorus, iron, and calcium, all of which nourish hair while also darkening it. The herb *Emblica officinalis* (Indian gooseberry or Amla), which is used in Thai traditional recipes, is thought to slow down

the ageing process. Amla is also an antiulcer, anti-dyspeptic, and digestive agent, as well as a diuretic, laxative, liver tonic, refrigerant, stomachic, restorative, alterative, antipyretic, anti-inflammatory, and hair tonic. These gooseberries produce a fixed oil that is used to strengthen and promote hair growth. The dried fruit, which improves hair hygiene, has long been utilized as an important ingredient of shampoo and hair oil. Thus, the Indian gooseberry is used as a hair tonic in traditional recipes for enriching hair growth and pigmentation. ^[14]

6. *Simmondsia chinensis* (Link) Schneider (Jojoba oil)



Fig: 6 Plant of *Simmondsia chinensis* (Link) Schneider

Simmondsia chinensis (Link) Schneider is native to North and Central American deserts but cultivated worldwide in Chile, Egypt, and Argentina. *Simmondsiaceae* is a small family of one genus, *Simmondsia*, which is abundant in Southern Arizona, Sonora, and Baja California. Plants in the "Simmondsiaceae" family are mostly woody branched shrubs that grow to be 2–4 m tall. Jojoba was widely used by Native Americans in the Sonora desert (California) as a food and as a therapeutic for a variety of ailments, including cancer therapy, liver and kidney disorders, obesity, parturition, sore throat, superficial wound healing, warts, psoriasis, acne, sunburn, and poison ivy exposure treatment. Jojoba oil is widely used in the pharmaceutical industry, particularly in cosmetics, to help hair and skin regain their normal health. In addition to treating sensitive skin stress, the leaf extract, when combined with extracts from other plants, acts as an anti-inflammatory agent. Bath oil, body oil, cleansing creams, cleansing pads, cleansing scrubs, nourishing facial cream, facial oil, hair conditioner, hair oil, makeup remover, and shaving cream are just a few of the jojoba cosmetics currently on the market. Furthermore, the oil has a variety of industrial uses, including as an extreme temperature/extreme pressure lubricant in the form of sulfurized oil, which can withstand high temperatures and pressure without changing viscosity. Other industrial uses include the extraction and separation of isotopes such as Uranium (VI), Thorium (IV), and Plutonium (IV); As a surfactant, fire retardant, lamp oil, candle wax, polishes, and antifoaming agents in the isolation of penicillin and tetracycline; as a surfactant, fire retardant, lamp oil, candle wax, polishes, and antifoaming agents in the isolation of penicillin and tetracycline ^[15]

7. *Rosmarinus officinalis* Linn. (Rosemary oil)



Fig: 7 Plant of *Rosmarinus officinalis* Linn

Rosemary (*Rosmarinus officinalis L.*) is an aromatic evergreen herb belonging to family *Labiatae* with antioxidant, antibacterial, antifungal, and anti-inflammatory properties. Rosemary improves microcapillary perfusion as well. Rosemary is a common aromatic shrub that grows densely in many parts of the world. It has traditionally been used to treat renal colic and dysmenorrhoea (painful menstruation). It is also a matter of composition. Hair follicles are stimulated by topical herbal therapy. Aromatherapy is thought to be a safe and effective alopecia areata treatment. Treatments with essential oils derived from Thyme, Rosmarinus, Lavender, and Cedarwood were far more effective than treatments with the carrier oil alone. Rosemary constitutes 1-2% volatile oil containing 0.8-6% of esters and 8-20% of alcohols, The principal constituents are 1, 8-cineole, borneol, camphor, bornyl acetate and monoterpene hydro-carbons.^[7]

8. *Lavandula angustifolia* Miller (Lavender oil)



Fig: 8 Plant of *Lavandula angustifolia* Miller

Lavender oil (LO) (family: *Labiatae*) constituents include linalyl acetate, linalool, the chief constituents of lavender oil are Lavenanol, linalyl acetate, linalool, lavendulyl acetate, terpineol, cineol and geraniol. It has been shown to help with fatigue recovery, stress relief, cell growth, skin reproduction, and alopecia areata. Linalool acetate ester, one of these constituents, is effective for nerve relaxation, and linalool tincture has antifungal properties. Aromatherapy is one of the alternative medicines that is gaining popularity right now. Essential oils enter your system via the olfactory system (inhalation) and/or the skin, and then travel through your circulatory system (blood), where they bind to receptors and alter the chemical composition. Topical herbal therapy stimulates hair follicles and it is proved as safest way to cope up with different type of hair loss (alopecia), however perfect pharmacological actions of these herbs and oils are yet not known.^[16]

9. *Argania spinosa* (L.) Skeels (Argan spinosa kernel oil)



Fig: 9 Plant of *Argania spinosa* (L.)

Argan oil is prepared from the fruits of argan trees (*Argania spinosa* (L.) Skeels) following a multistep process. The argan tree *Argania spinosa* (L.) Skeels, family *Sapotaceous* is a slow-growing tree exclusively endemic to the barren lands of southwest Morocco. The argan oil is constitute of acylglycerols, including 95% of triacylglycerols, constitute 99% of extract. The remaining 4% are composed of monoacylglycerols (0.27% - 0.65%), diacylglycerols (0.68 - 1.53), and free fatty acids (1.1% - 2.0%). It's primarily used to condition hair. Hair conditioners' main purpose is to make hair easier to comb by reducing the antistatic properties of the hair. Hair conditioners also have secondary functions such as preventing flyaway hair, making the hair "shine," and protecting the hair from further damage.^[17]

10. *Citrullus colocynthis* (L.) Schrad (Bitter apple oil)



Fig: 10 Plant of *Citrullus colocynthis* Schrad

Citrullus colocynthis(family: *Cucurbitaceae*) is an herb that has been recommended in traditional literature as a hair growth promoter. The dried pulp of the unripe but full-grown fruit freed from the rind constitutes the drug, colocynth of commerce, and is used for treating loss of hair. The oil from the seeds of the plant has been reported and is used by ethnic tribes for controlling premature falling and greying of hairs. It contains mainly glycosides, which upon enzymatic hydrolysis yield elaterin (cucurbitacin E), elatericin B (cucurbitacin I) and dihydroelatericin B (cucurbitacin L). *Citrullus colocynthis* promotes the growth of hairs with least hair growth initiation and completion time and maximum number of hair follicles in anagenic phase. Herbal formulations containing petroleum ether extracts of the three herbs (*Cuscuta reflexa*, *Citrullus colocynthis*, *Eclipta alba*) in varying ratio was evaluated for the hair growth promoting activity.^[2]

11. *Prunus dulcis* (Almond oil)



Fig: 11 Plant of *Prunus dulcis*

The almond oil is obtained from *Prunus dulcis*(Family: *Rosaceae*). Approximately 78 percent of this fat is found in almond oil. Super-unsaturated Omega-3 essential fatty acids are present in very small amounts in this oil. It softens and strengthens the hair and is extremely nourishing. Almond oil is also a very effective cleanser. Even before it became a commercial agro-product, almond oil has been used for centuries.^[18]

12. *Eucalyptus globulus* (Eucalyptus oil)



Fig: 12 Plant of *Eucalyptus globulus*

Eucalyptus oil is the generic name for distilled oil from the leaf of *Eucalyptus*, a genus of the plant family *Myrtaceae*. Eucalyptus oil can help to get rid of dandruff, which in turn can help to promote healthy growth of hair. Just mix about 9 to 10 drops of eucalyptus oil with shampoo and then gently massages scalp for a few minutes, after which rinse it off with water. Massage your scalp with eucalyptus oil to improve blood circulation and make your hair healthier and more beautiful.^[18]

13. *Cocos nucifera* (Coconut oil)



Fig: 13 Plant of *Cocos nucifera*

Coconut oil comes from the fruit or seed of the coconut palm tree *Cocos nucifera*, family *Arecaceae*. The melting point of coconut oil is 24 to 25 °C (75-76 °F) and thus it can be used easily in both liquid and solid forms and is often used in cooking and baking. Coconut oil is excellent as a skin moisturiser and softener. A study found that coconut oil helped prevent protein loss from the wet combing of hair when used for fourteen hours.^[18]

14. *Ginkgo Biloba* (Ginkgo oil)



Fig: 14 Plant of *Ginkgo Biloba*

Ginkgo comes from the ginkgo tree. It belongs to family *Ginkgoaceae*, which grows to a huge size. Constitutes of *Ginkgo biloba* are Ginkgolides A, B, C, J, M, bioflavin, sitosterol, lactones and anthocyanins. *Ginkgo Biloba* prevents the visible signs of ageing that appear on the skin like wrinkles, fine lines and dryness of the skin when combined with turmeric, honey and ginseng. It's a sunscreen that's made from natural ingredients. It can reduce hair thinning and hair loss. It has also been shown to help men with various types of baldness. *Ginkgo Biloba* is extremely rich in Vitamin E and thus, prevents skin problems like scars, stretch marks, acne, patchiness and pimples. It hydrates and rehydrates the skin, keeping it healthy and youthful. Ginkgo also fights oxidation and protects the nervous system.^[2-3]

15. *Eclipta alba* Hassk. (*Bhringraj* oil/extract)



Fig: 15 Plant of *Eclipta alba* Hassk.

Eclipta alba Hassk. (*Bhringaraja*) is a small-branched annual herb with white flower heads inhabiting tropical and subtropical regions of the world. It traditionally used to check hair loss and stimulate hair growth. The extracted juice if taken internally and applied to the scalp blackens the hair. The principal constituents of *Eclipta alba* are coumestan derivatives like wedololactone (1.6%), dimethyl wedelolactone, desmethyl-wedelolactone-7 glucoside and ecliptal, β -amyrin, luteolin-7-O-glucoside, hentriacontanol, heptacosanol, stigmasterol. *Eclipta alba* is a component in various polyherbal formulations for hair growth promotion. Methanolic extract has been shown potential as a hair growth promoter. It is also reported that the petroleum ether extract of *E. alba* promotes follicular enlargement and prolongation of anagen phase.^[2-3]

16. *Nardostachys Jatamansi* DC (*Jatamansi* oil/extract)



Fig: 16 Plant of *Nardostachys Jatamansi* DC

Nardostachys Jatamansi DC commonly called Jatamansi or spikenard in English and it is a small shrub. The rhizomes of the plant are used since antiquity in the indigenous systems of medicine. It mainly contains bornyl acetate, valeranone, jnonon, menthylthymyl-ether and 1, 8-cineol. It is reported that Nordostachys Jatamansi is having hair growth activity. It was investigated that the ethanolic extract of Jatamansi has prominent hair growth effect in chemotherapy induced alopecia. It was proved that formulation containing *Eclipta alba* Hassk, *Hibiscus rosa sinensis* Linn, *Nardostachys Jatamansi* have excellent hair growth promoting activity as shown by an enlargement of follicular size and a prolongation of the anagen phase. Hexane extract of the rhizomes of *N. jatamansi* showed positive response in hair growth activity due to two compound nardin and jatamansic acid. They showed moderate reduction in hair growth time.^[2-3]

CONCLUSION

Alopecia is one of the most common problems among city dwellers due to stress, environmental issues, and other factors. Many herbal oils/extracts are effective in treating alopecia without causing side effects. Allopathic drugs are used to treat hair loss, but they have numerous side effects. When compared to synthetic drugs, herbal drugs were recommended by about 80% of residents for their beneficial effects as well as fewer side effects. These herbal oils/extracts with multiple phytoconstituents can treat alopecia by acting as DHT and 5--Reductase blockers or by providing nutritional supplements. A few natural treasures also contain volatile oil active constituents that can be used as aromatherapy to treat alopecia by improving scalp blood circulation. They also Synergistics effect which is further beneficiary for individual human being. In this review article, we summarized some of the herbs that are believed to reduce the rate of hair loss and at the same time stimulate new hair growth.

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