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COMPREHENSIVE OVERVIEW ON THE PROBLEMS OF HAIR AND THE VARIOUS HERBAL APPROACHES TO TREAT THEM

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ABSTRACT

Hair assumes significant job in the character of human and is gotten from ectoderm of the skin. It is a decoration structure along with sebaceous organ. An objection of "hair loss" may allude to both of two things: an expanded measure of hair dropping out every day (effluvium) or noticeable hairlessness (alopecia). The hair issues are divided into scarring (cicatricial) and non-scarring (non-cicatricial) hair loss. Alopecia areata is an erratic state of balding. Alopecia is a dermatological issue with psychological implications on patients with hair loss. The significant issues which make hair loss are hair blurring, dandruff and falling of hair. Various infectious agents and disease related conditions that grant hair loss as ringworm, folliculitis, piedra, Demodex folliculorum, Seborrheic dermatitis. Given that synthetic medications have almost no or very little side effects when used for the treatment of alopecia, herbal formulations have attracted a lot of attention.

Key Words: Alopecia, Antifungal, Antiviral, Antimicrobial, Antibacterial, Anti-inflammatory.

1. INTRODUCTION

A protective appendage on the body, hair is one of the important body components formed from the skin's ectoderm. Hair has

been a beauty symbol for both men and women since ancient times. The hair falls out of the head every day, especially when

bathing and brushing. It's not uncommon to lose 70–100 hairs every day; however, losing more than 100 hairs per day for more than a few weeks signals a severe issue. Hairstyles become thinner when there is more hair loss than growth; if this process continues, baldness may result [1].

One of the most frequent causes for admission to dermatology clinics is scalp infections. Scalp lesions can have a wide range of various etiologies. This chapter will discuss scalp cutaneous infections and potential herbal treatments for them. Folliculitis, folliculitis decalvans, tufted hair folliculitis, and acne keloidalis nuchae are a few examples of bacterial infections. Fungal diseases such tinea capitis, favus, and kerion celsi will be present [2].

Today, there is a global movement toward returning to the usage of herbal remedies and moving toward a more natural way of life. For a healthy lifestyle, people prefer natural foods, herbal remedies, and natural healing techniques. The allopathic system on its own is becoming inadequate, necessitating the use of herbal medications as a complement. The best method for protecting people's health is to use both traditional and contemporary systems. Clinical studies have shown that herbal remedies can promote hair growth. The

primary issues related to hair loss include dandruff, falling hair, and hair that is fading in colour. There are several synthetic medications available for treating hair loss, but they don't work long-term and come with negative side effects as well. Herbal remedies may be used to address this issue. In the long term, using Ayurveda is safer and preferable. When compared to goods that include a variety of substances, these items' side-effect profiles are "zero" [3].

2. Hair

"Modified epithelial structure generated as a result of keratinization of germinative cells" is how hairs are described. The follicles that are found on the skin produce hair as their outgrowth. These follicles are located on the dermis, the second layer of skin, and they reach all the way to the epidermis, the skin's top layer. Hair develops from these follicles. Keratin, which includes the chemical elements carbon (C), hydrogen (H), nitrogen (N), sulphur (S), and oxygen, makes up hair (O). Although each person's rate of hair growth is different, on average, hair grows 5 to 10 mm every month. Around the age of 15 to 30 is when hair growth is at its peak. It has also been shown that summertime hair growth is greater than wintertime growth [4]. The term "hair" frequently refers to two

different structures: a) the area beneath the skin, known as the hair follicle, or the bulb when it is taken out of the skin. The shaft, which is the tough filamentous portion that protrudes above the skin surface, and stem cells, which help hair regrow after falling out or being injured, are both maintained by this dermal organ [5].

On the scalp alone, there are between 1,000,000 and 2,000,000 hair follicles. Every part of the body has more hair follicles; everything save the lips, soles, and palms of the body have hair. Hair on the head is a component of a person's general

appeal and beauty, however hair in an odd position has a negative effect. From an evolutionary perspective, human hair is similar to our relatives' animal fur in appearance. Both covers materialised to offer warmth. There are seven parts to the scalp (skin on the head) (Figure 1). Here are the [6];

- Papilla of hairs
- Hair shaft
- Mouth of follicle
- Stratum granulosum
- Sebaceous gland
- Oil duct.

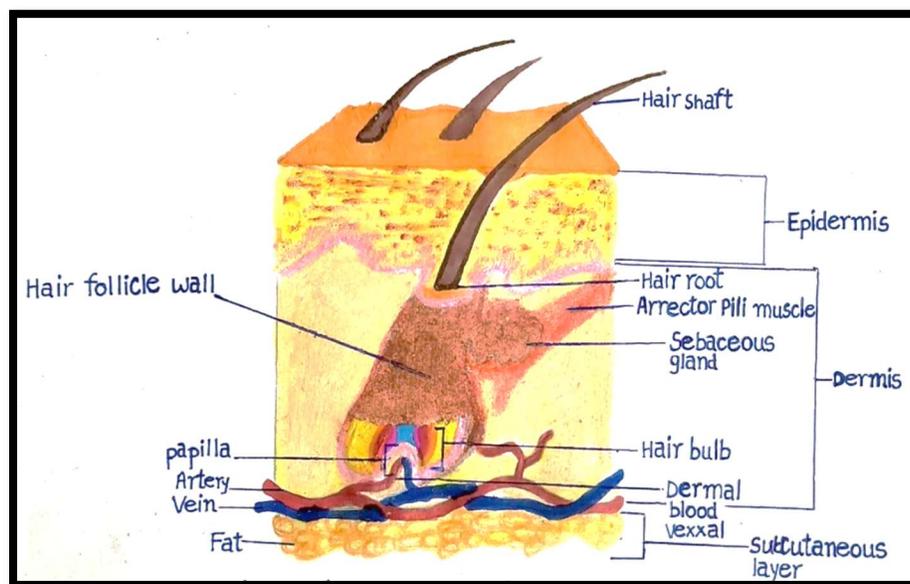


Figure 1: Structure of hair follicle [18]

2.1. Types of hairs

Morphologically there are three types of hairs [7]:

- Intermediate hair: These appear on the scalp and exhibit morphology between vellus and terminal hair. Intermediate

hairs have a fair amount of colour and are medullated.

- Terminal hair: These are medullated and big with dark colour. Men have 90% terminal hairs on their chest, back, shoulders, thighs, and arms compared to women's 4500 terminal hairs in the same areas.
- Vellus hair: These are short, fine, soft usually nonpigmented and un-medullated.

2.2. Hair Growth Cycle

The cumulative, physical result of a well-orchestrated process of cellular proliferation and differentiation within a hair follicle is hair growth. The adult hair follicle is formed as a result of a period of intense proliferation that the stem cells undergo after committing to the fate of a hair follicle. Dermal and epithelial components make up the majority of hair follicle composition. The hair cycle refers to the regular cycles of regeneration that occur in hair follicles, the tiny organs that produce hair shafts [8, 9].

The anagen phase of hair development is followed by the catagen and telogen phases in a cycle that occurs repeatedly. The hair follicle goes through several cycles of growth, including an active growing phase (anagen) during which the old hair is shed, a brief transitional regressive phase

(catagen), and a dormant resting phase (telogen), which enables the follicle to produce various hair types in response to hormonal changes [10]. Every hair on the human body is developing at its own rate. Once the cycle is over, it resumes, and a new hair strand starts to grow. **Figure 2** shows that the hair follicle actively creates precursor cells that develop into several kinds of hair cells throughout the anagen phase of human scalp hair, which lasts between two and seven years [11].

The anagen (or growth) phase is the first of a number of phases that make up the development of hair. Keratinocytes, which make up the numerous layers of each hair shaft, are produced at this time by cell division in the matrix of the hair bulb. The keratinocytes' pigment is produced by melanocytes in the hair bulb. The length at which the hair enters the catagen (or degeneration) phase, where cell division and pigmentation stop, varies depending on the area of the body. The hair shaft grows back into the original follicle and is lost during the telogen (or resting) phase. A new follicle develops beneath the old follicle. It is unknown if the hair is shed during a distinct active shedding stage (exogen), or if it just falls out as a result of the new hair shaft's upward trajectory. 92,106 Research

on the growth of human head hair has revealed that the majority (80%–90%) of hairs are always in the anagen phase, with 1%–2% of them in the catagen phase and the remaining 10%–20% in the telogen phase [12].

Hair loss seems to be a result of telogen or anagen stage dysfunctions. The telogen phase, also known as the telogen effluvium phase, is prolonged in some types of hair loss and is linked to excessive hair shedding. An autoimmune condition known as alopecia areata universalis is brought on by peri- and intrafollicular [13]. Other types of hair loss are associated with the inability of the anagen stage of the hair cycle to create viable hair, which results in faulty anagen-stage hair shafts and shrinkage of the follicles [14, 15]. Similar anagen

malfunction is thought to underlie androgenetic alopecia, the most well-known kind of hair loss in humans (male pattern baldness). The actions of dihydrotestosterone on genetically sensitive hair follicles in this scenario are likely what lead to a defective anagen stage and shrinkage of the follicles [16].

An average healthy scalp has one million hairs, 90% of which are always in the anagen stage of hair development. Depending on the hair follicles and age of the individual, the typical rate of hair growth is around half an inch every month. In a typical hair growth cycle, 50 to 60 scalp hairs are shed every day, and new hairs start to develop from these follicles. Less new hair starts to develop during the regrowth period when hair loss starts [17].

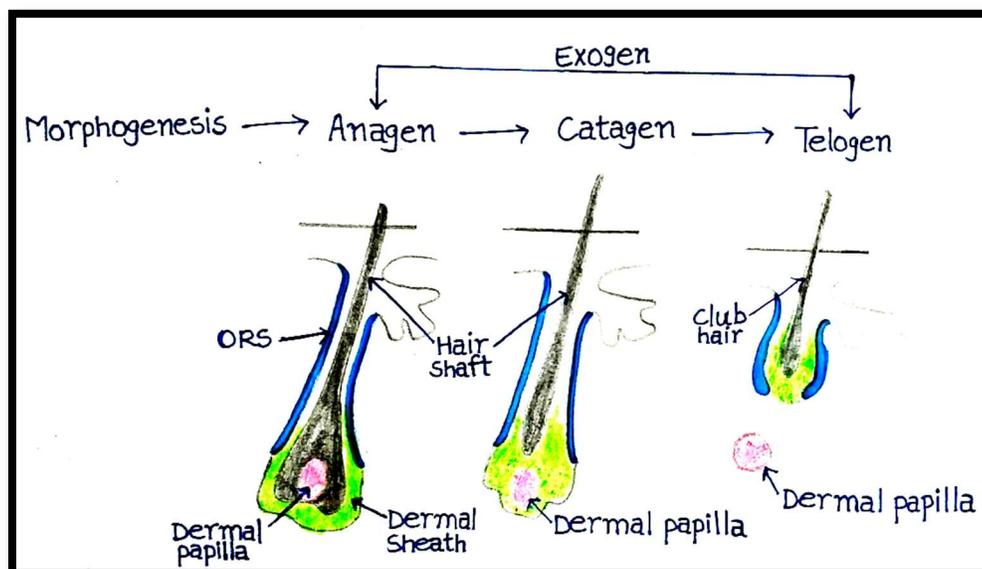


Figure 2: Hair cycle: Anagen phase, catagen phase and telogen phase [18]

2.3. Common Problems and Disorders of Hair

The main problems associated with hairs are pigmentation (fading), dandruff and falling of hairs (shedding) and balding [19] (Figure 3). There are various disorders of hair, which causes the hair loss. The term androgenetic alopecia is often used to describe the patterned loss of scalp hair in genetically susceptible men and women. This condition is also known as male pattern hair loss or common baldness in men and as female pattern hair loss in women. Alopecia in these cases is characterized by thinning of

hair as opposed to follicular loss, at least in early stages [20]. In androgenetic alopecia, shortening of the anagen phase and continuous miniaturization of sensitive hair follicles takes place that result into conversion of thin terminal hairs into fine vellus hairs [21]. Follicular miniaturization and consequential hair loss is universal to some extent and is considered a physiological secondary sexual characteristic. Androgenetic alopecia only becomes a medical problem when the hair loss is excessive, premature and distressing to the patient (Table 1) [22].

Table 1: Most Common Hair Disorders, Clinical indications and Treatments [22]

Disease	Set of Causes	Clinical Indications	Treatment/Medications
Anagen effluvium	Secondary to cytotoxic drugs like thallium, bismuth, arsenic, Cell division inhibition in hair follicle.	Loss of all hair on scalp	Scalp Cooling
Telogen effluvium	Shedding of telogen hairs (no scars), Secondary to Stress like high fever, surgery, crash diet	Uniform decrease in density all over scalp, Positive hair pull test	Shampoo less frequently
Alopecia areata	Genetic Factor, Autoimmune disease	Circular patches of hair loss, Hairs grow back white.	Inject Steroid (Kenalog)
Traction alopecia	Hair styling like Pony tails.	-	Hair Grafts
Androgenic alopecia	Male and female pattern baldness	Beginning with bitemporal recession, bald patch	Rogain (Minoxidil), Propecia (Finasteride), Hair Transplants
Trichotillomania	pulling hair out	Chronic, repetitive hair pulling	Self-monitoring, Stimulus control, Habit-reversal training

2.4. Psychological Aspects of Hair Disorder

Disorders that cause hair loss can be quite upsetting for patients. Although many do not offer a serious medical concern, hair

plays a key role in socioculture. The severity of hair loss frequently does not correspond to the effect on psychosocial function, necessitating a customised strategy. Because hair loss diseases are

linked to mental health and can occasionally have serious psychological effects, therapy should address both physical and psychological issues. This article includes a discussion of the effects of common hair loss illnesses on quality of life as well as psychological strategies that healthcare

professionals may use to give better treatment. It is crucial that dermatology and psychiatry residency programmes include psychodermatology and psychotrichology (**Table 2**). Liaison clinics for dermatology and psychiatry might be helpful in the treatment of these patient [23].

Table 2: Classification of psychotrichological disorders [23]

Classification	Psychotrichological disorders
Primary psychiatric Hair loss condition is a psychiatric disorder	Trichotilomania Trichoteiromania Trichotemnomania Trichodaknomania Trichorrhizophagia Trichobezoar
Secondary psychiatric Hair loss condition has propensity to cause comorbid psychiatric condition, such as major depressive disorder or generalized anxiety disorder	Anagen effluvium Cicatricial alopecia Androgenetic alopecia Traction alopecia Tinea capitis
Psychophysiologic Hair Loss Condition may be exacerbated by and interrelated to mental health	Telogen effluvium Alopecia areata
Cutaneous sensory disorder Hair loss condition caused by unspecified complaint	Scalp pruritus or burning related to other disorder

2.5. Types and Causes of Hair Loss [24]

2.5.1. Androgenetic or androgenic alopecia (baldness)

It is sometimes referred to as genetic baldness and is the most typical cause of hair loss in males. Hair follicle size is decreased, anagen time is shortened, and the proportion of telogen hair follicles is increased in androgenetic alopecia.

2.5.2. Alopecia areata

Alopecia areata is a condition in which the hair on the scalp (alopecia areatatotalis) or

the entire body (alopecia areatauniversalis) falls out.

2.5.3. Telogen Effluvium

When several hairs enter the telogen phase at once, this condition is known as telogen effluvium.

2.5.4. Chemotherapy-induced alopecia

This particular form of hair loss is brought on by the adverse effects of cancer treatment. Aloe vera (leaves), Indigofera tinctoria (whole plant), Trigonella foenum-graecum (seeds), Nigella sativa (seeds), and Cocos nucifera (oil) have all been touted as

effective home remedies for treating dandruff, greying hair, and hair loss. Additionally, the composition gives the hair a natural black colour. The purpose of the study was to create a potent formulation employing the aforementioned unprocessed medicines to treat hair loss diseases.

Causes of Hair Loss

It is a controversial issue as there is no general agreement about what are the main factors that cause loss of hair. It is a universal problem having affected both

sexes of all races to different extents for as long as humankind has existed [25]. Various factors contributing to hair loss includes genetic predisposition, hormonal factors, and disease states such as typhoid, malaria, jaundice and use of chemotherapeutic agents (**Figure 4**). It is a dermatologic disorder, and the surge for discovering natural products with hair growth promoting potential is continuous [26].

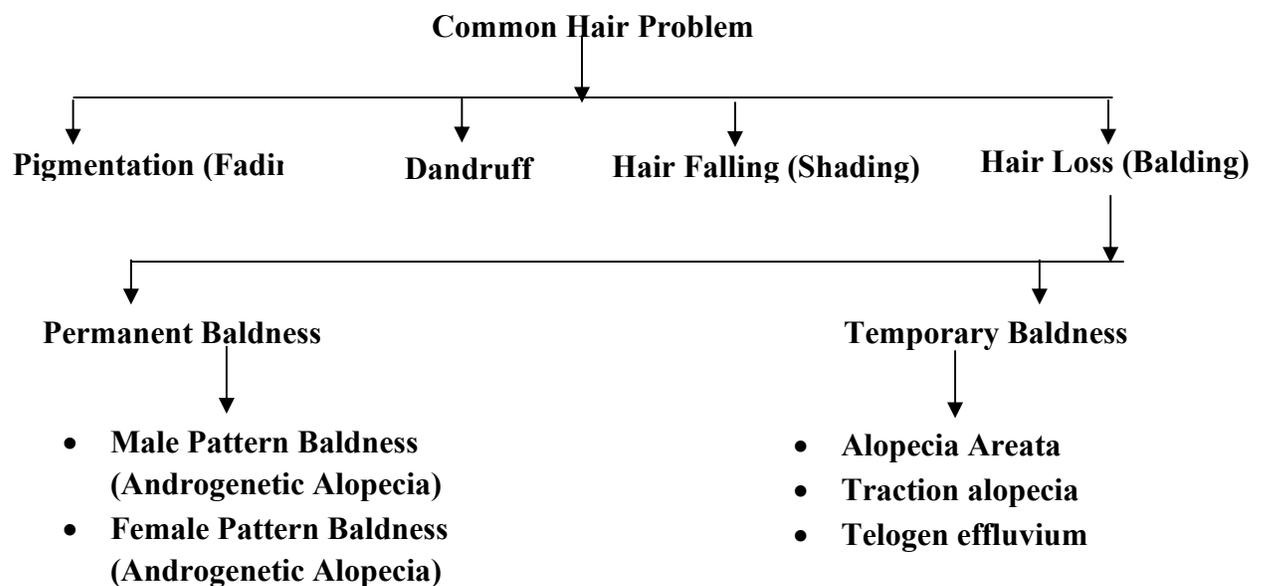


Figure 3: Major hair problems lead to hair loss [22]

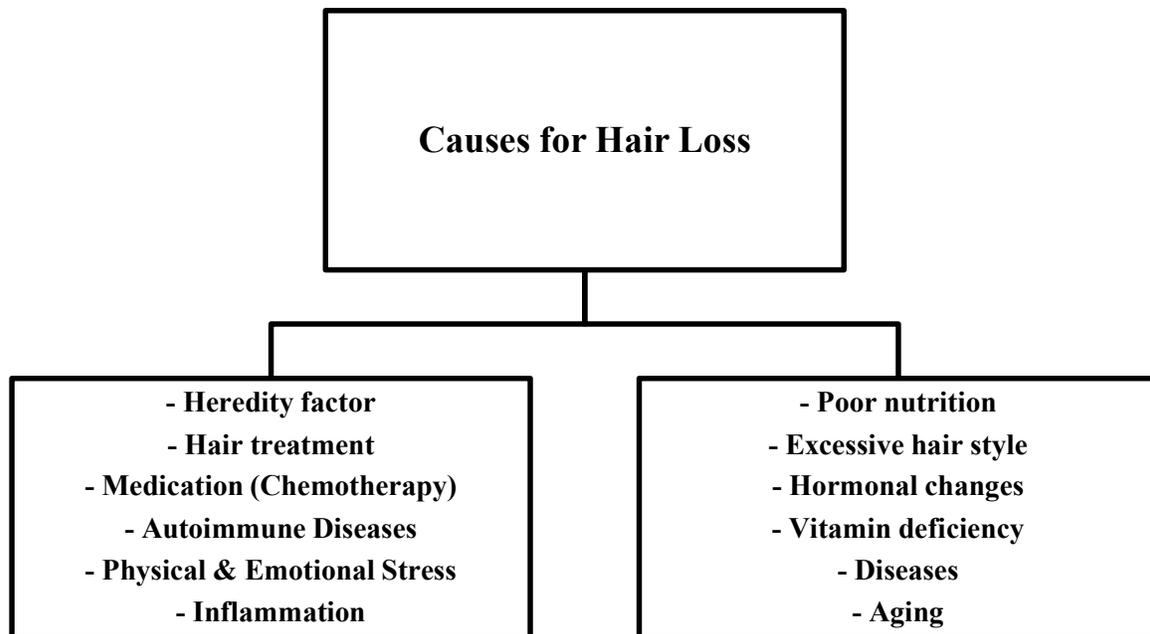


Figure 4: Common cause that promote the hair loss [22]

2.6. Various infections that causes hair loss

One of the most frequent causes for admission to dermatology clinics is scalp infections. Scalp lesions can have a wide range of various etiologies. Folliculitis, folliculitis decalvans, tufted hair folliculitis, and acne keloidalis nuchae are a few examples of bacterial infections. Fungal illnesses including tinea capitis, favus, and kerion celsi will be discussed in depth. A diverse range of dermatoses are represented by the neoplasms of the scalp.

2.6.1. Bacterial infections of scalp

The term "chronic scalp folliculitis" (SF), "folliculitis decalvans" (FD), "tufted folliculitis" (TF), "acne nuchae keloidalis"

(ANK), and "dissecting cellulitis" (DCS) refer to many forms of infections of the scalp. Similar characteristics of these infections include scalp-specific persistent scarring folliculocentric pustules. *Staphylococcus aureus* [SA] is present in many of these illnesses, and many of them respond to antibiotic treatment [26].

2.6.2. Fungal Infections of Scalp

a. Favus

The most severe kind of tinea capitis is favus, sometimes known as tinea favosa. *Trichophyton schoenleinii* is the cause. Children are usually affected by the condition, although adults seldom do. If left untreated, the illness never goes away. Only sometimes are Favus spotted in North

America or South America. Favus is nearly exclusively found in Africa, the Mediterranean, and the Middle East [27].

b. Kerion

A rare inflammatory form of tinea capitis known as kerioecelsi (KC) or "deep tinea capitis" manifests as a painful, oozing mass that is covered with broken hairs, pustules, and frequently has purulent discharge coming from its surface. In KC, hair loss is a common occurrence. Although it typically just has one lesion, there may be more [28].

c. Tinea capitis

Dermatophytes of the scalp's epidermis called tinea capitis (TC) have a penchant for attacking hair follicles and shafts. Most prepubescent youngsters between the ages of 3 and 7 experience it. Within pre-pubertal age, it is recorded more frequently in boys than in girls. The most prevalent paediatric dermatophyte infection in the world is tinea capitis [29, 30].

2.6.3. Protozoal infections of scalp

a. Syphilitic alopecia

Treponema pallidum is the sexually transmitted pathogen that causes syphilis. With a frequency of 2.9-11.2%, syphilitic alopecia (SA) is a rare symptom of secondary syphilis. Numerous 'moth-eaten' patches of alopecia of the scalp, non-scarring, non-inflammatory, uneven in size,

without defined borders, are seen during the physical examination. There may also be a role for the beard and eyebrows. SA might be detected together with other mucocutaneous secondary syphilis symptoms. About 8 to 12 weeks following the onset of the first secondary syphilis symptoms, hair loss often develops [31].

2.6.4. Infestations of scalp

a. Pediculosis capitis

The *Pediculus humanus capitis*, often known as head lice, is a common infection that affects children in school between the ages of 3 and 12 and is known as pediculosis capitis (PC) or head lice. The frequency of PC varies widely from nation to country and is often greater in girls and women. In Turkey, it is 0.7-59%, in Europe it is 0.48-22.4%, in England it is 37.4%, in Australia it is 13%, in Africa it is up to 58.9%, and in the Americas it is 3.6-61.4%. According to estimates, 6-12 million youngsters in the US contract PC each year. In 5318 primary school students in Mersin, Turkey, ages 8 to 16, the frequency was 6.8%. Another research found that 16.6% of 1569 schoolchildren aged 7 to 14 had head lice. Children are more likely to experience it since they frequently come into touch with other kids head-on. Due to their propensity for having longer hair than males and their

social tendencies, girls were more likely to have head lice [32, 33].

2.6.5. Neoplasms of scalp

Due to their diverse origins, the neoplasms of the scalp include a wide range of various disorders. They fall into two categories: benign and malignant. They fall under the categories listed in **Table 1**. The epidermoid

cyst, trichilemmal cyst, lipoma, dermoid cyst, pilomatricoma, steatocystoma multiplex, and cylindroma are the most typical benign swellings of the scalp. This section goes into great depth on neoplasms, particularly those that arise from the scalp and are the most common.

Table 3: The neoplasms of the scalp [34]

Benign neoplasma	Malignant neoplasms
Epidermoid cysts Trichilemmal cysts Proliferating trichilemmal cysts Seborrheic Keratosis Lipoma Dermoid cyst Pilomatricoma Steatocystoma multiplex Actinic Keratosis Nevus sebaceous Melanocytic nevus Cylindroma Angiolymphoid hyperplasia with eosinophilia Neurothekeoma Infantile myofibromatosis Hemangioma	Basal cell carcinoma Squamous cell carcinoma Melanoma Proliferating trichilemmal cyst Angiosarcoma Cutaneous lymphoma Cutaneous metastases

3. Ayurvedic Claims for Hair Growth Activity

It helps to have a basic understanding of Ayurveda in order to get the best hair growth using Indian medicines. Ayurveda is a tradition that dates back thousands of years that focuses on understanding the body's humours and how they relate to the five basic elements: air, wind, earth, fire, and ether. Vata, pitta, and kapha are the three main doshas, or constitutions, according to Ayurveda. Everyone possesses one, two, or all three in some combination.

Each dosha has an impact on a person's internal organs, physical characteristics, personality traits, and emotions. Ayurvedic practitioners think that sickness results from a dosha imbalance. The health of the body's many organs, including the hair and how effectively it develops, can be impacted by these imbalances [35].

4. Herbal drugs for hair growth promoting with nutritional support activity [36]

To sustain healthy hair development, one needs minerals including calcium, iron,

copper, chromium, iodine, zinc, and magnesium. A mineral shortage will decrease the likelihood of controlling thyroid hormones, which prevent dry hair and hair loss as well as colour flaws, and blood circulation, which encourages healthy hair development. Your body becomes poisonous from too much iron. Before using any mineral supplements, be sure to see your doctor.

Biotin is an antioxidant found in whole grains, egg yolks, liver, rice, milk, and other foods. B vitamins, including B6, B3, B5, and folic acid. For general well-being, vitamin A is essential. As the hair root is kept moisturized, it is also advantageous to hair follicles. Vitamin E is an essential component in encouraging hair development and halting hair loss since it functions as an antioxidant and promotes healthy blood flow to the scalp through

enhanced blood oxygen absorption. Our body receives the resources it needs to create healthy hair from coenzyme Q10 (CQ-10), a vital vitamin. Additionally, they support general vigour, help to maintain healthy nails and skin.

The finest sources of vitamin E, an antioxidant that strengthens the immune system and protects the nerves, are often fatty foods like yoghurt and soy, dark green vegetables, whole grain products, essential fatty acids, nuts, and seeds. The vitamin A content of carrots is very high. It is an antioxidant that aids in the scalp's healthy sebum production. Hair loss can result from consuming too much vitamin A. Other meals including fruits, eggs, spinach, and broccoli can also assist to encourage hair development and stop hair loss. The list of herbs that support nutrition is given in **Table 4** below.

Table 4: Herbs providing nutritional support in the treatment of Alopecia [36, 37]

Biological Source	Family	Common Name	Part Used	Chem. Const.	Action
<i>Ginkgo biloba</i>	Ginkgoaceae	Maindenhair tree	Leaves and seed	Ginkgolides A, B, C,J,M, bioflavin, sitosterol, lactones and anthocyanins	Nutritional Support
<i>Phyllanthus embelica</i>	Euphorbeaceae	Indian Gooseberry	All Parts	Vitamin C, phylemblin, tannin, phosphorous, iron, calcium	Nutritional Support
<i>Allium cepa</i> L.	Liliaceae	Onion	Bulb, leaves and flowers	Protein (albumin), allyl propyl disulphide, diallyl sulphide, alliin, allicin.	Nutritional Support
<i>Rosmarinus officinalis</i>	Labiatae	Rosemary	Leaves, twings, and	Angustifolia Miller, volatile oil,	Nutritional Support

			flowering apices	esters, 1.8-cineole, borneol, camphor	
<i>Juglans regia</i> L.	Juglandaceae	Walnut	Leaves	Fatty acids, linoleic acid and linoleic acid	Nutritional Support
<i>Glycyrrhiza glabra</i> Linn	Leguminosa	Liquorice	Root and Rhizome	Glycyrrhizin, potassium and calcium salt of glycyrrhizinic acid	Nutritional Support
<i>Aloe barbadensis</i>	Liliaceae	Aloe vera	Leaves	Minerals	Nutritional Support
<i>Juglans regia</i> L.	Juglandaceae	Akhrot	Fruit	Fe, Cu, Mn, K, Proteins and fats	Nutritional Support
<i>Amaranthus spinosus</i> L.	Amaranthaceae	Bathua	Seeds, Leaves	Fe, Cu, Zn and other Minerals	Nutritional Support
<i>Lactuca sativa</i> L.	Asteraceae	Lettuce	Leaves	Vit. A and Folic acid	Nutritional Support
<i>Avena sativa</i>	Poaceae	Wild Oats	Seeds	Carbohydrates, Fibers, Fe, Zn, and Mn	Nutritional support
<i>Bacopa monniere</i>	Scrophulariaceae	Brahmi	Entire plant	Triterpenoids saponins, bacosides	Nutritional Support and nerve stimulant
<i>Medicago sativa</i>	Fabaceae	Alfalfa	Leaves	Proteins, Calcium, Minerals and Vitamins	Nutritional Support
<i>Cajanus cajan</i>	Fabaceae	Pigeon pea	Seeds	Protein, starch and minerals	Nutritional Support
<i>Pelvetia canaliculata</i>	Fucaceae	Channelled wrack	Brown algae	Isoflavones	Antioxidant action like Vit. E
<i>Daucus carota</i> L.	Apiaceae	Carot	Roots	B-caotene, antioxidant and minerals	Nutritional Support
<i>Phyllanthus embelica</i>	Euphorbiaceae	Amla	Fruit	Gallic acid, Vit. C, Quercetin	Nutritional Support
<i>Prunus amygdalus</i>	Rosaceae	Badam	Seed oil	Vit B1, B2, B3, minerals, Vit. E, Fats	Nutritional Support, Nervine tonic

5. Herbal therapies used in hair loss

Acupuncture, aromatherapy, massage, hypnotherapy, and psychotherapy are some of the methods that have been researched for treating hair loss.

1. Acupuncture

Fine needles are inserted into the body at precise places for therapeutic purposes during acupuncture, which has been shown

to be effective in treating migraines, osteoarthritis, and back pain [37]. Numerous skin conditions are treated using plum-blossom acupuncture, which employs seven needles placed in the form of a flower [38].

Acupuncture is supposed to improve circulation, activate hair follicles, and lessen inflammatory infiltrates [39].

Electroacupuncture (acupuncture with low electric current) increased hair growth and decreased mast cell degranulation in a murine model of AA. 89% of AA patients who had acupuncture saw complete hair regrowth, and 11% experienced noticeable improvement. 78 individuals received plum-blossom acupuncture in the alopecia region or daily topical application of 2% MXD, with complete hair regrowth occurring in 58.1% of acupuncture patients compared to 34.3% of MXD patients [40]. Combining acupuncture, pharmacopuncture, and needle-embedding led to an unexplained "amazing" improvement of AGA in a Korean case report [41]. To fully explain the function of acupuncture in the management of hair loss, more research is required.

2. Hypnotherapy

The possibility of using hypnotherapy as a hair loss cure has been studied. In order to work with the subconscious mind, the patient is put into a trance-like state of awareness that involves greater concentration and attention as well as improved response to therapist suggestions [42]. There are inconsistent results from research using hypnotherapy approaches (direct and indirect suggestion, ego building) for the treatment of AA, ranging

from those showing a definite lack of response [43, 44] to those displaying beneficial outcomes [42]. In one trial, 20 AA patients had 10 hypnotherapy sessions over a 6-month period; nonetheless, hair loss did not improve [44]. After three to eight sessions, 42% of patients had entire hair growth and 57% had noticeable hair regrowth in 21 patients (9 AT/AU and 12 AA). All patients' anxiety and sadness levels improved. Three of the patients who reacted to hypnosis underwent hypnosis alone; eight other individuals underwent concurrent corticosteroids or immunotherapy. Following the end of hypnosis, 5 patients had relapse [42].

3. Aromatherapy

As a supplement, aromatherapy can be used to treat alopecia. It makes use of extremely concentrated extracts made from flowers, leaves, bark, and other plant parts diverse plant roots, including those of *Arnica montana*, *Cedrus atlantica*, *Lavandula angustifolia*, and *Ocimum sanctum*, *Rosmarinus officinalis*, *Thyme vulgaris*, *Pilocarpus jaborandi*, etc. The crucial component of aromatherapy. Oils can enter your body through your skin or olfactory system (inhalation). Similar to herbs that are consumed orally enter the blood's circulatory system, where they connect to

receptors and alter the blood's chemical makeup. These oils function on a spiritual level as well as a cellular level to relax and strengthen the nervous system and promote wellbeing [36].

4. Psychotherapy

The words "psychotherapy" and "therapaia" are Greek words that imply "healing, medical treatment," "breath, spirit, and soul," respectively [45]. Psychotherapy, as opposed to hypnosis, focuses solely on the conscious state of mind. Overall, there is encouraging but limited research supporting the use of psychotherapy to treat hair loss. 83% of patients with refractory AU experienced hair growth when relaxation and image therapy were added as a complementary therapy to immunotherapy (prednisolone 5-10 mg/day for 2 months, followed by cyclosporine 2.5 mg/kg and prednisolone for another 4-5 months) as

opposed to 17% of patients who experienced regrowth with immunotherapy alone [46].

6. Herbs used in treatment of alopecia with their mode of actions

There are many different herbs-based compounds. Pharmaceuticals, pesticides, flavourings, scents, and food colouring are all thought to be abundant in herbs. For the treatment and prevention of hair loss, there are several herbal extracts with effects that stimulate hair growth. Although the exact mechanism by which these products work is uncertain, it is asserted that blood flow acceleration, anagen dermal papillae activation, DHT suppression, anti-inflammatory action, and increased nutrition are secondary causes of hair growth [47-50]. Here are some examples of popular herbs for treating hair loss, and others are gathered in **Table 5**.

Table 5: Herbs used for the treatment of alopecia with mode of actions [37, 49]

Biological Source	Family	Mode of actions
<i>Ginkgo biloba</i>	Ginkgoaceae	The medicine is well recognized for enhancing cerebral microcirculation, which raises oxygen delivery.
<i>Phyllanthus embelica</i>	Euphorbeaceae	Red blood cells in your body need iron to be oxygenated. It is necessary for keeping healthy hair and proper hair development. Iron deficiency will result in hair loss due to a lack of oxygen if the required quantity of iron cannot be replenished by food consumption.
<i>Allium cepa L.</i>	Liliaceae	Zinc helps the scalp produce much-needed oil and prevent dandruff, which can lead to hair loss. Red blood cells in your body need iron to be oxygenated. It is necessary for keeping healthy hair and promoting regular hair development.
<i>Rosmarinus officinalis</i>	Labiatae	The essential oils enter your body through your skin and/or olfactory system, travel through your circulatory system (the blood), attach to receptors, and alter the chemical makeup of the blood. Although topical herbal therapy has been shown to safely treat several forms of hair loss

		(alopecia), the exact pharmacological activities of these herbs and oils are still unknown. Topical herbal therapy stimulates hair follicles.
<i>Juglans regia</i> L.	Juglandaceae	The fruit provides vital elements that support the development of strong hair. As was previously mentioned, iron enhances blood circulation and oxygen delivery. Zinc helps the scalp produce much-needed oil and prevent dandruff, which can lead to hair loss. In the case of Copper, research suggests that these tripeptide complexes may even be able to help individuals who have completely lost all of their hair due to alopecia regrow hair. Copper values in healthy tissue range from 1.7 to 3.5 milligrammes.
<i>Glycyrrhiza glabra</i> Linn	Leguminosae	Another effective treatment for patchy baldness is liquorice paste, which is created by pulverising the candy in milk with a dash of saffron. The bald spots should be covered with this paste at night before sleeping.
<i>Polygonum multiflorum</i>	Polygonaceae	Traditional medicine uses the roots of <i>P. multiflorum</i> to promote hair growth, and several investigations have demonstrated this to be true. For instance, a recent research found that 2,3,5,4 0-tetrahydroxystilbene-2-O-D-glucoside, one of the active ingredients from <i>P. multiflorum</i> , stimulated melanogenesis in melanocytes. The mechanisms of action and hair growth-promoting properties of <i>P. multiflorum</i> extracts were revealed.
<i>Panax ginseng</i>	Araliaceae	The active ingredient in <i>Panax ginseng</i> that effectively stimulates hair growth by inhibiting transition-related TGF- β signalling pathways is ginsenoside Re.
<i>Carthamus tinctorius</i>	Asteraceae	Human keratinocytes (HaCaT) and dermal papilla cells (DPCs) both proliferated in response to the ethanolic extract of <i>C. tinctorius</i> flowers, which also increased the expression of genes that stimulate hair development including VEGF and keratinocyte growth factor (KGF). Transforming growth factor-1 (TGF-1), a gene linked to hair loss, was reduced by CTE.
<i>Chamaecyparis obtuse</i>	Cupressaceae	In the HaCaT, the impact of <i>C. obtusa</i> oil on the control of hair morphogenesis and hair development was investigated. The expression of VEGF was increased, which has a beneficial regulatory impact on hair growth.

7. Some herbal preparations and method of administration

Table 6 offers an overview of the substances utilised, administration techniques, levels of evidence, kinds of

alopecia treated, study durations, outcomes, observed side effects, and hypothesised mechanisms of action for the herbal preparations evaluated in this paper.

Table 6: Some herbal preparations overview for the treatment of alopecia [49]

Biological Name	Substance employed	Method of administrations	Results
<i>Allium cepa</i> L.	Raw bulb juice	Topical	Hair growth, increased number of hairs
<i>Allium sativum</i> L.	Bulb juice	Topical	Significantly increased total number of hairs
<i>Camellia sinensis</i> L.	Polyphenol-epigallocatechin-3-gallate (EGCG)/ polyphenol fractions from the dry leaves	Topical/orl	EGCG stimulated hair growth
<i>Cucurbita pepo</i> L.	Seed oil	Oral	Positive anabolic effect on hair

<i>Curcuma aeruginosa</i> Roxb.	Rhizome, extract, essential oil	Topical	Stimulated hair growth, slowed down hair loss
<i>Panax ginseng</i> C.A. Meyer	Root extract	Topical/oral	Prevented hair loss, improved hair growth
<i>Serenoa repens</i>	Plant extract	Topical/ oral	Increase in hair growth
<i>Sophora flavescens</i>	Dried root extract	Topical	Stimulated hair growth
<i>Trifolium pretense</i>	Flower extract	Topical	Increased the number of hair, reduced hair loss
<i>Aetherolum</i>	Mix of essential oils/rosemary essential oil	Topical	Increase the number of hair
Procyanidin B-2 from apple	Fruit juice	Topical	Increase the hair growth

8. CONCLUSION

One of the major issues affecting metropolitan residents and dominating discussions of environmental issues, etc., is alopecia. Therefore, with the aid of this review paper, we draw the conclusion that many herbal medicines are effective in treating alopecia without causing adverse effects. There are numerous different allopathic medicine kinds for treating hair loss, however they all have negative side effects. Any investigation into medicines must begin with herbs. About 80-90% of the locals suggested herbal medicines since they had less negative side effects than synthetic pharmaceuticals and more positive results. These herbal extracts, which include a variety of phytoconstituents, can cure alopecia by acting as DHT and 5-Reductase blockers or by giving nutritional supplements. A few more natural gems with volatile oil active ingredients can be utilised as aromatherapy

to cure alopecia by increasing blood flow to the scalp.

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