

## THE WONDER OF HERBS TO TREAT - ALOPECIA

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### ABSTRACT

Herbal cosmetics have growing demand on the earth market and are a precious gift of nature. Herbal formulations continuously have attracted gigantic concentration on the grounds that of their good endeavor and comparatively lesser or nil side effect with synthetic medications. Herbs and spices have been used in retaining and embellishing human magnificence because time immemorial. Hair loss problem is of great significance to both men and women. The essential issues associated with hair loss are hair fading, dandruff, and falling of hair. Alopecia is the medical term for hair loss or baldness. It is an embarrassing condition for any person as he/she looks extra aged than ordinary. Many forms of medication are available to treat alopecia in special procedure of medication such as Allopathic, Homeopathic, and Ayurveda or can also be surgical like hair transplantation; however, none of them is wholly ample. This hindrance could be solved by the use of natural medicines obtained from herbs. Various herbs are being used to preclude the hair loss and remorse of hairs including *Aloe vera*, brahmi, nagarmotha, amla, bhringraj, and lots of different herbs. Being average medicines, there are various advantages of making use of them like patient compliance, less side results, convenient availability, inexpensive and multiple mode of applications to treat alopecia, and other hair diseases.

**Keywords:** Herbal medicine, Herbal cosmetics, Natural herbs, Hair growth activity, Hair cycle, Brahmi, Nagarmotha, Amla, Bhringraj, Alopecia, Alopecia areata, Allopathic, Homeopathic, Ayurveda, Beauty, Hair loss, Hair fading, Dandruff, Falling of hair, Herbal formulations.

### INTRODUCTION

Hair is among the valuable parts of the physique derived from ectoderm of the skin and is a protective appendage on the physique. Humans have hairs that serve principle position of their lives. From the historic times, hairs had been a magnificence symbols for both men and women. On a daily basis, the hair falls out of the head, specifically throughout washing and brushing. 70-100 hairs loss a day is a very common; however, dropping over 100 hairs a day lasting longer than a couple of weeks indicates a serious problem. When more hair falls out than grows, hairstyle becomes thinner; if that procedure persists, even baldness may occur [1]. Alopecia is the scientific term for hair loss or baldness. Alopecia will also be of everlasting or transitory kind; it might probably cover quite a lot of variety and areas of haired head epidermis of various shapes. It happens from numerous explanations, and the special identification is not often feasible. Alopecia by and large begins with one or more small, circular, delicate bald patches on the scalp and can growth to whole scalp hair loss or whole physique hair loss [2]. Male is more susceptible than female in the case of alopecia. It usually is due to the presence of an excessive quantity of androgenic hormone, testosterone, in male. Average merchandise within the form of herbal formulations are available in the market and are used as hair tonic, hair growth promoters, hair conditioner, hair-cleansing agent, antidandruff agent as well as for the treatment of alopecia and lice illness [3].

Ayurveda has described hair diseases in three words [4]:

- Indralupta means alopecia areata, alopecia totalis, and alopecia universalis
- Khalitya means loss of hairs
- Palitya means premature hair graying.

### HAIR

Hairs can be defined as – “Modified epithelial structure formed as a result of keratinization of germinative cells.” Hairs are the outgrowths from the follicles present on the skin. These follicles are situated on the dermis, the second layer of the skin and extended up to the epidermis

that is the outermost layer of the skin. Through these follicles grows out hair. Hair is composed of keratin with chemical constituents such as carbon (C), hydrogen (H), nitrogen (N), sulfur (S), and oxygen (O). Hair growth varies from person to person but on an average hair grows about 5-10 mm/month. Maximum growth of hairs takes place at the age of about 15-30 years. It is also seen that hair growth is more in summers as compared to winters [3]. There are about 1,000,000-2,000,000 hair follicles on the scalp alone. Additional hair follicles are found all over the body; hair is present in every area of the skin except the palms, soles, and lips. The presence of hair in odd place make a negative effect, whereas hairs on the head are a part of overall attraction and beauty of human being. From an evolutionary point of view, hair on humans is fur on our mammal cousins. Both coverings emerged to provide warmth. Scalp (skin on head) consists of seven components. These are papilla of hairs, hair shaft, mouth of follicle, stratum granulosum, sebaceous gland, and oil duct (Figs. 1-3) [5].

### Types of hairs

Morphologically there are three types of hairs [6]:

- Intermediate hair: These arise on the scalp and show morphology between these of terminal and vellus hair. Intermediate hairs are medullated and incorporate reasonable quantity of pigment
- Terminal hair: These are large darkly pigmented and medullated. 90% of the hairs on the chest, trunk, shoulders, legs, and arms of men are terminal hairs, whereas only 4500 of hair in the same region on women are terminal
- Vellus hair: These are short, fine, soft usually nonpigmented and un-medullated.

### HAIR GROWTH CYCLE AND ITS MECHANISM

The hair growth undergoes a repetitive cycle where the anagen phase followed by the catagen and the telogen phase [7]. In the anagen phase, the hair is actively growing while in the catagen phase it is characterized by the degeneration and resorption of the lower region of the hair follicle. The resting phase, where the hair is inactive, is called telogen phase after this phase the growth of the hair follicle restarts (Figs. 4 and 5).

In the scalp, a hair growth cycle has three main phases: Anagen, catagen, and telogen. The anagen phase is the growth cycle typically lasts 3-5 years. On a healthy scalp, there are approximately 1,000,000 hair and 90% of the follicles are continually in the anagen phase of hair growth. The catagen stage follows the end of the growth period when a follicle begins to become dormant. The telogen stage is a dormant or resting period that lasts 3-4 months. When the dormant phase ends, an old hair falls out. A hair follicle then returns to the anagen stage, and a new hair begins to grow. An average rate of hair growth is about half an inch per month depending on hair follicles and age of an individual. On average, 50-60 scalp hairs are lost daily in a normal hair growth cycle and new hairs begin to grow from these follicles. Hair loss begins when less new hair begins the re-growth stage [8].

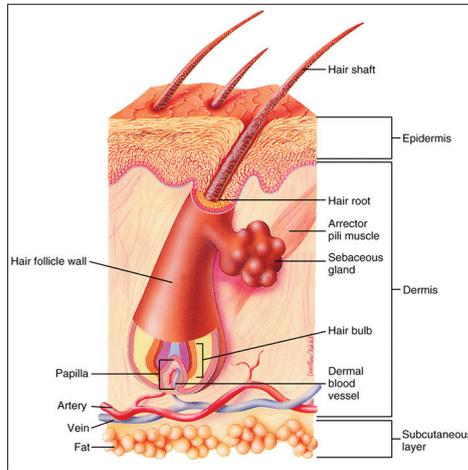


Fig. 1: Structure of hair follicle

**HAIR LOSS**

There are several factors for the hair loss; some of the main factors are given below:

- Acute illness
- Autoimmune disorders
- Chemicals (hair dyes)
- Chemotherapeutic agents/drugs
- Diabetes
- Hair loss following childbirth
- Hair styling products
- Hair styling techniques
- High iron deficiency
- Nutritional deficiencies
- Other fungal infections
- Physical trauma to the scalp
- Poisons
- Poor blood circulation
- Poor diet or malnutrition
- Prescription drugs
- Psychological
- Radiation exposure
- Ringworm
- Skin disease
- Stress
- Sudden weight loss
- Surgery
- Thyroid disease.

**SIGNS AND SYMPTOMS OF HAIR LOSS**

Basically, hair loss symptoms are:

- Broken hairs or hairs easily removed
- Gradual thinning of hair, especially on the top of the head

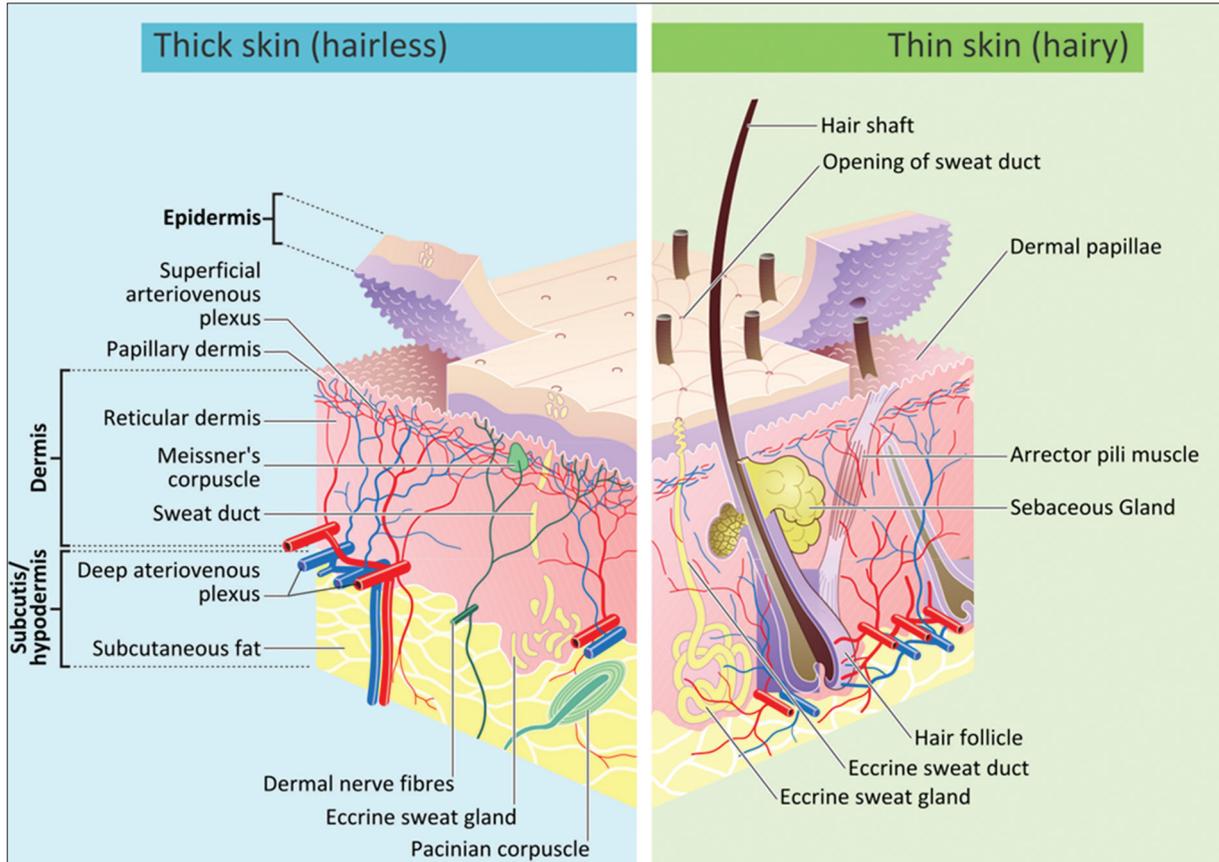


Fig. 2: Structure of thick and thin hair follicle

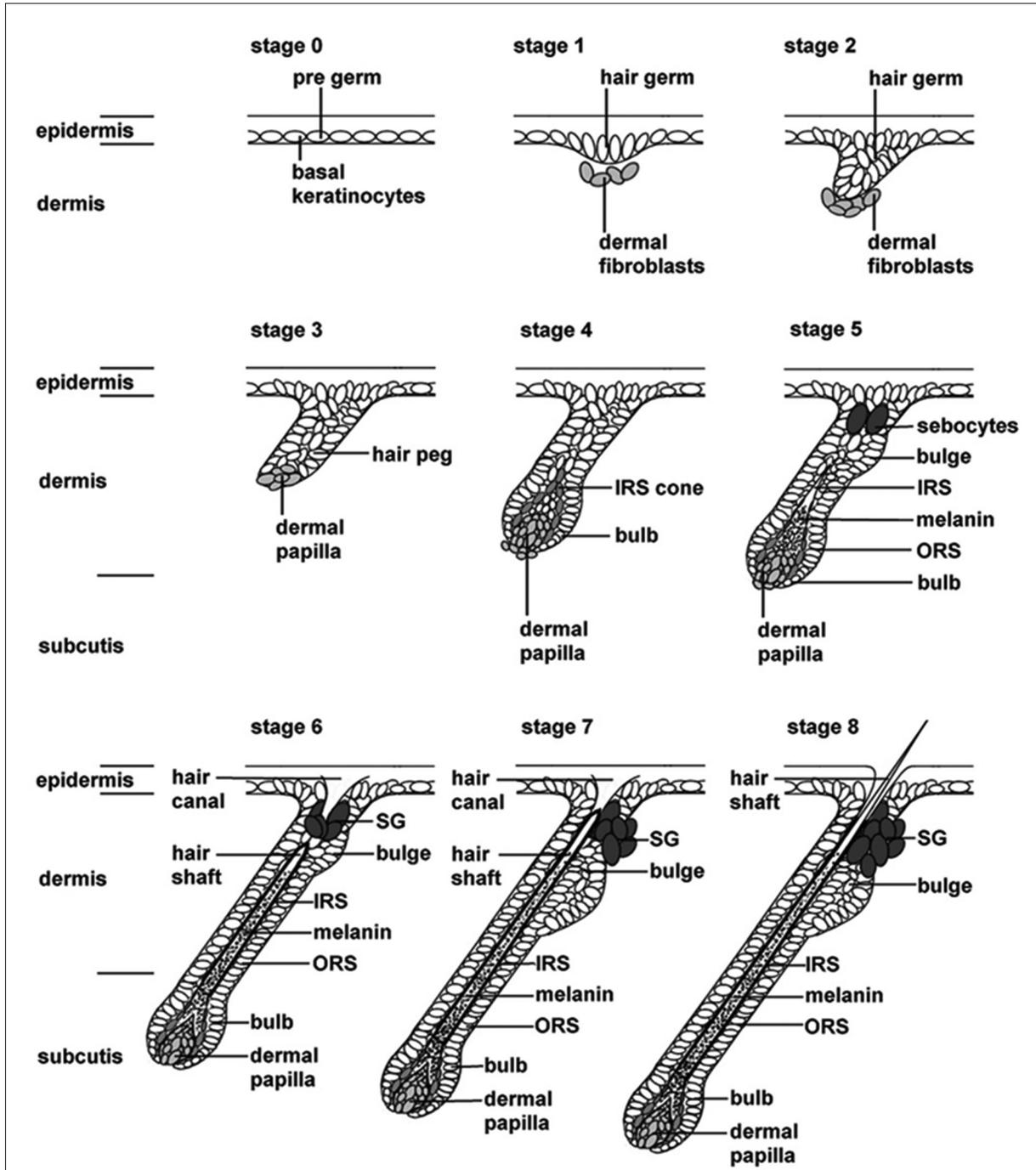


Fig. 3: Stages of hair follicular development

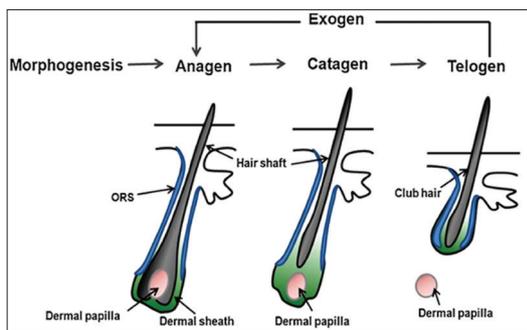


Fig. 4: Hair cycle: Anagen phase, catagen phase and telogen phase

- One or more round or oval bald patches
- Thinning or absence of hair at the hairline and top of the head (Fig. 2).

**TYPES OF ALOPECIA**

- Alopecia areata (primary 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
- Alopecia totalis: Loss of hair from entire scalp
- Alopecia universalis: Loss of hair from entire body including eyebrows and eyelashes
- Chemotherapy and hair loss: Chemotherapy is an exclusive treatment for cancer patients but it affects normal cells and hair follicles too.

Table 1: List of plants having hair growth promoting, nutritional support, and antidandruff activity

S. No.	Plant	Family	Common name
1.	<i>Acacia concinna</i>	Mimosaceae	Shikakai
2.	<i>Achillea millefolium</i>	Asteraceae	Yarrow
3.	<i>Achyranthes aspera</i>	Amaranthaceae	Apamarg
4.	<i>Adiantum capillus</i>	Adiantaceae	Hair fern
5.	<i>Albizia amara</i>	Fabaceae	Silk plant
6.	<i>Allium cepa</i>	Liliaceae	Onion
7.	<i>Aloe vera</i>	Liliaceae	Medicinal aloe
8.	<i>Amaranthus spinosus</i> L.	Amaranthaceae	Bathua
9.	<i>Arctium lappa</i>	Asteraceae	Burdock
10.	<i>Aristolochia bracteol</i>	Aristolochiaceae	Birthworts
11.	<i>Arnica montana</i>	Asteraceae	Arnica
12.	<i>Artemisia abrotanum</i>	Asteraceae	Southernwood
13.	<i>Avena sativa</i>	Poaceae	Wild oats
14.	<i>Azadirachta indica</i>	Meliaceae	Neem
15.	<i>Bacopa monnieri</i>	Scrophulariaceae	Brahmi
16.	<i>Brassica</i> spp.	Brassicaceae	Mustard
17.	<i>Berberis vulgaris</i>	Berberidaceae	Barberry
18.	<i>Betula pendula</i>	Betulaceae	Birch
19.	<i>Cajanus cajan</i>	Fabaceae	Pigeon pea
20.	<i>Calendula officinalis</i>	Asteraceae	Pot marigold
21.	<i>Capsicum annum</i>	Solanaceae	Pepper
22.	<i>Cardiospermum halicacabum</i>	Sapindaceae	Ballon plant
23.	<i>Cassia alata</i>	Fabaceae	Dadmari
24.	<i>Cedrus atlantica</i>	Pinaceae	Cedar wood
25.	<i>Centella asiatica</i>	Umbelliferae	Gotu kola
26.	<i>Chelidonium majus</i>	Papaveraceae	Celandine
27.	<i>Cinnamomum camphora</i>	Lauraceae	Camphor
28.	<i>Cinnamomum zeylanicum</i>	Lauraceae	Cinnamon
29.	<i>Citrus aurantifolia</i>	Rutaceae	Key lime
30.	<i>Citrus limon</i>	Rutaceae	Lemon
31.	<i>Coccus nucifera</i>	Arecaceae	Nariyal
32.	<i>Cyclea peltata</i>	Menispermaceae	Raj patha
33.	<i>Cyperus rotundus</i>	Cyperaceae	Nagarmotha
34.	<i>Datura innoxia</i>	Solanaceae	Datura
35.	<i>Daucus carota</i> L.	Apiaceae	Carot
36.	<i>Eclipta prostrata</i>	Asteraceae	False daisy
37.	<i>Embllica officinalis</i>	Euphorbiaceae	Amla
38.	<i>Eucalyptus</i> sp.	Myrtaceae	Eucalyptus
39.	<i>Ficus racemosa</i>	Moraceae	Bargad
40.	<i>Gardenia gummifera</i>	Rubiaceae	Gummy gardenia
41.	<i>Gmelina asiatica</i>	Verbenaceae	Asian bushbeech
42.	<i>Geranium sibiricum</i>	Geraniaceae	Siberian geranium
43.	<i>Glycine max</i>	Fabaceae	Soybean
44.	<i>Glycyrrhiza glabra</i>	Fabaceae	Liquorice
45.	<i>Hamamelis virginiana</i>	Hamamelidaceae	Witch haze
46.	<i>Hibiscus rosa sinensis</i>	Malvaceae	China rose
47.	<i>Hibiscus rosa sinensis</i> Linn.	Malvaceae	Gudhal
48.	<i>Hydrocotyle asiatica</i>	Apiaceae	Gotu cola plant
49.	<i>Juglans nigra</i>	Juglandaceae	Black walnut
50.	<i>Juglans regia</i>	Juglandaceae	Walnut
51.	<i>Juglans regia</i> L.	Juglandaceae	Akhrot
52.	<i>Juniperus communis</i>	Cupressaceae	Juniper berry
53.	<i>Lactuca sativa</i> L.	Asteraceae	Lettuce
54.	<i>Larrea divaricata</i>	Zygophyllaceae	Creosote bush
55.	<i>Lavandula angustifolia</i>	Lamiaceae	Lavender
56.	<i>Lawsonia inermis</i>	Lythraceae	Henna
57.	<i>Medicago sativa</i>	Fabaceae	Alfalfa
58.	<i>Melaleuca alternifolia</i>	Myrtaceae	Tea tree
59.	<i>Melissa officinalis</i>	Lamiaceae	Lemon balm
60.	<i>Mentha piperita</i>	Lamiaceae	Pippermint
61.	<i>Mussaenda frondosa</i>	Rubiaceae	Bebina
62.	<i>Nardostachys jatamansi</i>	Valerianaceae	Jatamansi
63.	<i>Nigella sativa</i>	Ranunculaceae	Black cumin
64.	<i>Nyctanthes arbor-tristis</i>	Oleaceae	Harsinghar
65.	<i>Ocimum sanctum</i>	Lamiaceae	Tulsi
66.	<i>Olea europaea</i>	Oleaceae	Indian olive
67.	<i>Panax ginseng</i>	Araliaceae	Ginseng
68.	<i>Pelvetia canaliculata</i>	Fucaceae	Channelled wrack
69.	<i>Persea americana</i>	Lauraceae	Avocado
70.	<i>Phaseolus vulgaris</i>	Fabaceae	Bean flower

(Contd...)

Table 1: (Continued...)

S. No.	Plant	Family	Common name
71.	<i>Phyllanthus amarus</i>	Euphorbiaceae	Nirurai
72.	<i>Pilocarpus jaborandi</i>	Rutaceae	Jaborandi
73.	<i>Plantago major</i>	Plantaginaceae	Plantain
74.	<i>Polygonum multiflorum</i>	Polygonaceae	Fo-Ti, He Shou Wu
75.	<i>Prunus amygdalus</i>	Rosaceae	Badam
76.	<i>Punica granatum</i>	Punicaceae	Pomegranate
77.	<i>Pygeum africanum</i>	Rosaceae	Pygeum
78.	<i>Pyrus malus</i>	Rosaceae	Apple cedar vinegar
79.	<i>Quillaja saponaria</i>	Quillajaceae	Soap bark
80.	<i>Ricinus communis</i>	Euphorbiaceae	Castor oil plant
81.	<i>Rosemarinu officinalis</i>	Lamiaceae	Rosemary
82.	<i>Salvia officinalis</i>	Lamiaceae	Sage
83.	<i>Santalum album</i>	Santalaceae	Sandalwood
84.	<i>Sapindus indica</i>	Sapindaceae	Soapnut
85.	<i>Sapindus mukorossi</i>	Sapindaceae	Ritha
86.	<i>Saponaria officinalis</i>	Caryophyllaceae	Soapwort
87.	<i>Sesamum indicum</i>	Pedaliaceae	Sesame
88.	<i>Sisymbrium irio</i>	Brassicaceae	Asalio
89.	<i>Solanum chrysotrichum</i>	Solanaceae	Devil's fig
90.	<i>Symphytum officinale</i>	Boraginaceae	Comfrey
91.	<i>Terminalia bellerica</i>	Combretaceae	Vibhitaka
92.	<i>Terminalia chebula</i>	Combretaceae	Haritaki
93.	<i>Thymus vulgaris</i>	Lamiaceae	Thyme
94.	<i>Tridax procumbens</i>	Asteraceae	Bhringraj
95.	<i>Trigonella foneum-graecum</i>	Fabaceae	Fenugreek
96.	<i>Urtica dioica</i>	Urticaceae	Stinging nettle
97.	<i>Vetiveria zizanioides</i>	Poaceae	Ushir
98.	<i>Vigna mungo</i>	Fabaceae	Black gram
99.	<i>Wrightia tinctoria</i>	Apocynaceae	Indrajeiv
100.	<i>Zanthoxylum rhetsa</i> (Roxb.) DC.	Rutaceae	Indian ivy rue, cape yellowwood

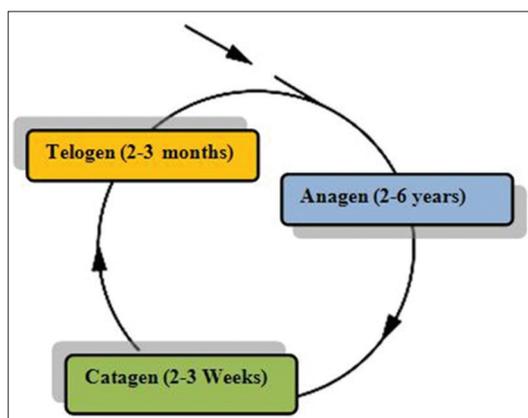


Fig. 5: Hair cycle showing anagen, catagen and telogen

This causes hair loss and known as anagen effluvium type of alopecia

- Diffuse alopecia: Excessive loss of hair all over the scalp without creating a patch
- Hair loss due to a side effect of the beauty treatments: Any beauty treatments such as hair colors, dye, straightening, softening, rebounding, and perming, which contains harsh chemicals can trigger hair loss for some individuals
- Mild transient alopecia areata: Patient with repeated transient alopecia areata but never converts into alopecia totalis or universalis
- Ophiasis alopecia areata: Ophiasis type of alopecia areata shows a band like hair loss. It occurs mostly in the temporal or the occipital regions of the scalp, and therefore, it is more difficult to treat, as most medicines have a delayed action on these areas
- Scarring alopecia: Any inflammatory process (burns, bacterial infections, ringworm, injury) sufficient to cause permanent loss of follicles, affected area known as scarring alopecia
- Telogen effluvium (TE) and chronic TE: Dietary deficiencies, crash dieting high-grade fever, anemia, blood loss, hormonal imbalance and

pregnancy, etc., can cause TE type of hair loss telogen word is known for resting phase of the hair and effluvium means letting loose

- Traction alopecia: Hair style that ties hairs so tight can cause much traction at the root of hairs, and can develop traction alopecia
- Transient alopecia areata: The patient with alopecia areata in progressive phase and some of them converts into alopecia totalis or alopecia universalis
- Tricotilomania: This type of hair loss is known as compulsive pulling or repetitive selfpulling by a patient himself or herself.

#### DANDRUFF

Dandruff (also referred as "Pityriasis simplex") is a common embarrassing disorder, which affects 5% of the global population. Dandruff mostly occurs after puberty (between ages of 20 and 30 years), and affects males more than females [9].

Dandruff is characterized by scaling of the scalp, and is frequently associated with seborrhea [10], and seborrhea is the precursor of seborrheic dermatitis [11]. The yeast, *pityrosporum ovale* is the causative microorganism of dandruff. *Pityrosporum ovale* feed on the dermal lipids and proteins and facilitates lipase activity, which releases pro-inflammatory free fatty acids causing dermal inflammation and tissue damage. The lipase activity indicates that in addition to hypersensitivity, *pityrosporum ovale* releases toxic chemicals, which contribute to the development of a fungal infection [12]. According to the symptoms, dandruff is classified into two types - Dry (common) and oily dandruff.

#### HERBS FOR HAIR LOSS

A lot of Allopathic, Ayurvedic, and Homeopathic products are available in the market some of them are formulated from the natural herbs extract as their basic ingredients. They come as hair tonics, hair promoting pills, hair oils, hair lotions and as a product for external or topical application to stop hair fall and promote new hair growth. There are millions of natural products which promote hair growth.

Many essential oils as well as herbs not only help stop falling hair but also they actually promote hair growth. Since ages, herbs and natural products are being used to treat hair loss or other hair related problems worldwide (Table 1) [13-35].

## CONCLUSION

Natural products are of greatest popularity because they are purely made up of herbs and shrubs. Today's generation both men and women suffers common hair problems as there may be more polluted atmosphere which results in hair disorders comparable to pigmentation problems (fading), dandruff and falling of hair (shedding). The use of bioactive materials from the natural system stimulates the biology of dermis and hair for usual growth that presents healthful hair and epidermis. Mainly natural system provides much nutrition, antioxidants, various oils, proteins, terpenoids, and many most important oils. Hair loss sufferers spend billion of dollar yearly on treatments ranging from medicinal drugs, nutrients to designated tonics and shampoos. Minoxidil and finasteride are the only two drugs authorized by the FDA for hair progress in men. Minoxidil is the only drug on hand for women with androgenetic alopecia.

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