



ALOPECIA: A MAJOR CURSE TO BEAUTY

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ABSTRACT

Alopecia is most serious medical condition, due to loss of hair from some or all areas of body, mainly scalp. There are different types of alopecia such as diffuse alopecia areata, alopecia areata monocularis, alopecia areata barbae, and alopecia areata totalis. The condition occurs in 0.1%-0.2% of person of any age group or any sex like late teenage, early childhood, young adult hood. There can be different causes of alopecia such as genetic, drug induced, environmental, emotional stress etc. It is an embarrassing condition for any person, as he/she looks more aged than normal. Many types of treatment are available to treat alopecia in different system of medicine like allopathic, homeopathic, ayurveda or can be surgical like transplantation but none of them is fully satisfactory. To avoid or reduce unwanted side effects of allopathic drugs most of person switch over to herbal medicine. Various herbs are being used to prevent the hair loss and regrowth of hairs including aloe vera, amla, bhringraj, brahmi, etc.

Keywords Alopecia, Drug Induced, Ayurveda, Bhringraj

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INTRODUCTION

Hair is one of the vital parts of the body derived from ectoderm of the skin, and is protective appendages on the body. There are accessory structure of the integument along with sebaceous glands and nails[1]. Hairs are of two types' vellus hair and terminal hair. As the level of testosterone increase in plasma, the formation of ambisexual and sexual hair occurs. The circulating testosterone is converted into dihydrotestosterone (DHT) by 5 α reductase. This DHT act, on the hair follicles and is responsible for the growth of ambisexual and sexual hair. The hair growth occur in three cyclic phase. Anagen, Catagen and Telogen phase[2]. In general 50-100 hairs at random are shed every day. An average increase of more than 100 hairs per day constitutes a state of hair loss or alopecia. Alopecia areata is a medical condition which is mainly characterized by the loss of hairs from some or all parts of body mainly on scalp. Some time it is also referred as male pattern baldness or spot baldness, because of formation of bald spots. Male has greater tendency of alopecia than female. It may be due to the presence of high amount of androgenic hormone, testosterone, in male. The exact cause of alopecia is unknown which leads to difficulties in treatment[3]. For the treatment of alopecia various allopathic medication like minoxidil and finasteride are available in the market but many of these do not fulfill the requirements and produce a various side effects such as hypotension, reoccurrence of alopecia, loss of libido, impotence, decreased volume of ejaculate (each in 3-4%), swelling of lips, skin rashes etc. Natural products are unequivocally advocated in the cosmetic and hair care industry and about 1000 different plant extracts have been examined with respect to hair growth activity; proanthocyanidine from grape

seeds (*Vitis Vinifera*) and [beta]-sitosterol in saw palmetto (*Serenoa serrulata*) have shown remarkable effect[4]. The advent of modern or allopathic medicine turned attention of scientist increasingly from plant sources to synthetic preparation as the basis for modern drugs[5]



TYPES OF ALOPECIA [6]

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.

Mild Transient Alopecia Areata- Patient with repeated transient alopecia areata but never converts into alopecia totalis or universalis

Transient Alopecia Areata - Patient with Alopecia areata in progressive phase and some of them converts into Alopecia totalis/Alopecia 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.

Alopecia Totalis - Loss of hair from entire Scalp. **Alopecia Universalis** - Loss of hair from entire body including eyebrows and eyelashes

Scarring Alopecia- Any inflammatory process (burns, bacterial infections, ringworm, injury) sufficient to cause permanent loss of follicles, affected area known as scarring alopecia.

Trichotillomania -This type of hair loss is known compulsive pulling or repetitive self-pulling by a patient himself/herself.

Chemotherapy and hair loss - Chemotherapy is exclusive treatment for cancer patients but it affects normal cells and hair follicles too. 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.

Telogen effluvium (TE) and chronic telogen effluvium- (CTE) Dietary deficiencies, Crash dieting High grade fever, Anemia, Blood loss, Hormonal imbalance and pregnancy etc, can cause telogen effluvium type of hair loss telogen word is known for resting phase of the hair and effluvium means letting loose.

Growth cycle [7-8]

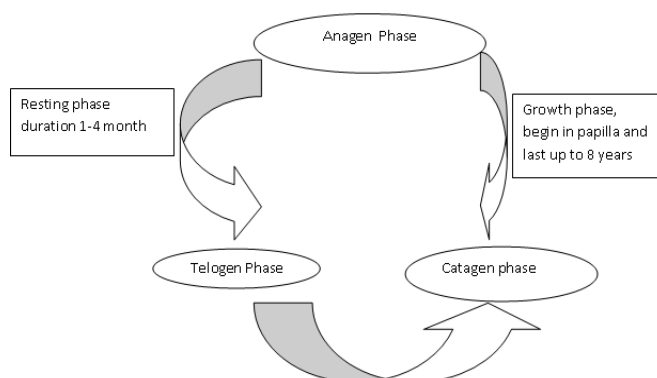


Table.1: Various allopathic medicines along with their mechanism and adverse effect [9]

NAME OF DRUG	MECHANISM	ADVERSE EFFECTS
Minoxidil(1%,2%,5%)	Peripheral Vasodilator and activate gene regulating hair protein	Dandruff
Finasteride	5- α -reductase	Impotence, erectile dysfunction
Dutasteride	same	Same
Spironolacton	It inhibits the production of androgens and also blocks the action of androgen at the receptor sites.	Gynecomastia
Cimetidine	Antiandrogen	Galactorrhea, gynecomastia
Oral corticosteroids (prednisone)	Unknown	Headache
Topical corticosteroids (betamethasone, clobetasol, triamcinolone,)	Unknown	Unknown
Anthralin	Antimiotic	Stains the skin a yellowy-brown

NATURAL PRODUCTS IN FORM OF HERBAL FORMULATION USED FOR ALOPECIA

Natural products in the form of herbal formulations are used as hair tonic, hair growth promoter, hair conditioner, hair-cleansing agent, antidandruff agents, as well as for the treatment of alopecia and lice infection[10]. A number of herbal products have been acclaimed with hair growth- promoting activity[11].

1. Hibiscus rosa-sinensis Linn (Malvaceae)



Parts used : Leaves & Flowers

Chemical constituents : Flavonoids; Anthocyanins and Cyaniding-3,5-diglucoside, Cyaniding-3-sophoroside-5-glucoside, Quercetin-3,7-diglucoside, Quercetin-3-diglucoside[12] . Adhirajan et al. reported that the leaf extract of Hibiscus rosa-sinensis has a potential effect on maintaining the hair growth in-vivo and in-vitro methods[13]

2. Cuscuta reflexa Roxb (Convolvulaceae)



Part used : Stems

Chemical constituents : Cuscutin, Cuscutalin, -Sitosterol, Luteolin, Bergenin & Kaempferol [14] . Dixit et al. reported hair growth activity of Cuscuta reflexa Roxb. Stem through the periodic transformation of hair follicle from telogen to anagen phase[15] .

3. Asiasari radix (Aristolochiaceae)



Parts used : Roots & Rhizomes

Chemical constituents : Safrole (18.4%), Methyl eugenol (18%), 3-methoxytoluenes & 3-benzodioxole derivatives[16] . Rho et al. suggested that the Asiasari radix extract has hair growth promoting potential, and this effect may be due to its regulatory effects on both cell growth factor gene expression[17] .

4. Ocimum gratissimum Linn (Lamiaceae)



Part used : Leaves

Chemical constituents : Essential oil : Eugenol, Carvacrol, Nerol & Eugenol methyl ether[18] . Orafidiya et al. investigated the efficacy of the leaf essential oil of Ocimum gratissimum Linn. (Ocimum oil) in promoting hair growth in cyclophosphamide-induced hair loss and concluded that ocimum oil may be capable of enhanced normal hair growth and promoting follicular proliferation in cyclophosphamide-induced hair loss[19] .

5. Aloe vera L. (Liliaceae)



Part used : Leaves

Chemical constituents : Barbaloin (15-40%) , Hydroxyaloin (3%), Mucilage (Glucose, Galactose, Mannose, Galacturonic acid), Aloe-emodin, Aloesone, Aloctutin A and B [20]. Aloe vera L. or A. barbadensis gel is used traditionally for hair loss and for improvement in hair growth following alopecia. Inaoka et al. reported that aloenin is the major constituent responsible for promoting hair growth without irritating the skin[21] .

6. Ginkgo biloba (Ginkgoaceae)



Part used : Leaves

Chemical constituents : Lactones (6%) : Diterpenoids , Ginkgolides A, B, C, Bilobalide-A, Flavonols (24%) : Kaempferol, Quercetin, Isorhamnetin[22] . Kobayashi et al. investigated that Ginkgo biloba leaf extract promote hair regrowth, through combined effects on proliferation and apoptosis of the cells in the hair follicle thus suggesting potential as a hair tonic[23].

7. *Tridax procumbens* L. (Compositae)



Part used : Leaves

Chemical constituents : Flavonoid : Procumbenetin[24], 1.7% Fumaric acid, -sitosterol, Alkalodies, Tannin[25] , Luteolin, Glucoluteolin, Quercetin, Isoquercetin[26] . Pathak et al. investigated hair growth promoting activity of *Tridax procumbens* promotes the growth of hair[27] .

8. *Sophora flavescens* (Leguminous plants)



Part used : Roots

Chemical constituents : Alkaloids: Oxymatrine, Matrine, Losmatrine, Sophoranol, Sophocarpine, Bioflavones : Norkurarinone, Kuraridinol, Sophoraflavanone, Formoronetin & Fatty acids[28]. Roh et al. found that the extract of dried roots *Sophora flavescens* has outstanding hair growth promoting effect. *Sophora flavescens* extract induced mRNA levels of growth factors such as IGF- 1 and KGF in dermal papilla cells, suggesting that the effect of *Sophora flavescens* extract on hair growth may be mediated through the regulation of growth factors in dermal papilla cells. In addition the *Sophora flavescens* extract revealed to possess potent inhibitory effect on the type II 5 Y-reductase activity[29] .

9. *Citrullus colocynthis* Schrad (Cucurbitaceae)



Part used : Fruits

Chemical constituents : Resinous Glycosides (Colocynthin & Colocynthitin), Phytosterol Glycoside, Citrullol, Pectin, Albuminoides, Cucurbitacins-Cucurbitacin E & I [30] . Dixit et al investigated of *Citrullus colocynthis* promotes the growth of hairs. Also found least hair growth initiation and completion time, maximum number of hair follicles in anagenic phase. 5-Reductase has been implicated as one of the major causes of hair loss. It may be rewarding if studies tounfold the mechanism of action of herbal extracts are undertaken using this bed [31] .

10. *Emblica officinalis* (Euphorbiaceae)



Part used : Fruits

Chemical constituents : Alkaloids (Phyllantidine, Phyllantine), VitaminC, Gallotannis (5%), Carbohydrates (14%), Pectin, Minerals, Phenolic acid, Gallic acid, Ellagic acid, Phyllemblic acid, Emblicol, Amino acid (Alanine, Aspartic acid, Glutamic acid, Lysine, Proline) [32]. Gupta et al investigated increase in hair growth activity of *Emblica officinalis* . It holds the promise of potent herbal alternative for minoxidil. Also suggest excellent results of hair growth in formula prepared by cloth pouch boiling method (*Emblica officinalis* (Euphorbiaceae), *Bacopa monnieri* (Scrophulariaceae), *Trigonella foenumgraecum* (Leguminosae), *Murraya koenigii* (Rutaceae) [33].

11. *Nordostachys jatamansi* (Valerianaceae)



Parts used : Rhizomes & Roots.

Chemical constituents : Volatile Essential Oil (0.5-2%) : Jatmansone, Sesquiterpenoid(0.02-0.1%), Spirojatamol, Patchouli alcohol, Jatamol A & B, Jatamansic acid, Nardostachone, Nardol [34] . Ali et al reported that *Nordostachys jatamansi* having hair growth activity [35].

12. *Eclipta alba* (L) Hassak (Asteraceae)



Part used : Whole plant

Chemical constituents: Flavonoids & isoflavonoids : Wedelolactone, Desmethylwedelolactone, Triterpene glycosides & Saponins : Eclalbasaponins I-VI, -amyrin [36] . Thakur et al investigated that -sitosterol and wedelolactone responsible for hair growth activity. 5-reductase inhibitor contributes in treatment of androgenic alopecia. 5-reductase inhibition by -sitosterol has been well documented in this study [37]. Daniel et al also reported the following herbs for hair growth activity [38] :

Table 2 : Marketed Herbal Formulation [39]

Sr. No.	Manufacture Formulation Content	Product name
1	Amla, Bringgraj	Keshamrit Oil
2	Bhringgraj, Godanti	Nutrich Capsule
3	Vacha, Jevanti	Keshmitra Tablet
4	Bhringgraj, Godanti	Nutrich capsule
5	Tulsi, Neem	Sidha Shampoo
6	Chamomile, Rosemary	Regrow Massage Oil

7	Amla, Bhringgraj	Saini Herbal Hair Conditioner
8	Amla, Heena	Shyamla Shampoo
9	Ashwagandha, Shatawari	Kesh Vardan Capsule
10	Amla, Bhringgraj	Kesh Rakshe Oil
11	Amla, Jatamansi	K-7 Taila Oil
12	Brahmi, Bhringgraj, S. indicum	Hibril Oil
13	Brahmi, Bhringaraj, L. innermis	Hairvit Oil
14	Hibiscus rosa sinensis, E. alba, O. sanctum	Hairich Capsule & Oil
15	Amla, Bhringaraj, Brahmi	Chirayu Herbal Oil
16	Amla, Bhringaraj, Guduchi	Hairbac Tablets

CONCLUSION

Alopecia, a dermatological disorder that has been recognized for more than 2000 years. It is common problem that has affected men and women. It is investigated through many treatment are on offered including natural or synthetic based products , but natural product are continuously gaining popularly and the use of plant extract in formulation. Because synthetics based product may cause human health hazard with several side effects. The advanced research may isolate some other beneficial compound from natural origin which has to eradicate the hair loss problem. Hence, it is advisable that we have use herbal product as compared to synthetic products. "HERBS ARE SAFE."

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