

REVIEW

ALOPECIA: SWITCH TO HERBAL MEDICINE

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Etc

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, 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.

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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 nails¹. Hairs are of two types' vellus hair and terminal hair. Vellus hairs are fine, light colored and straight, and terminal hairs are thicker, dark and may be curly. In the neonate, terminal hair, are present on the scalp, and on the region of eyelashes and eyebrows. These are also called nonsexual hair, because these hairs are not dependent upon androgen level. 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 phase².

In general 50-100 hairs at random are shed every day. An average increase of more than 100 hair per day constituents 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. This alopecia usually starts with one or more small, round, smooth bald patches on the scalp and can progress to total scalp hair loss or complete body hair loss. 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

treatment³. 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. Management of alopecia with agent devoid of any side effect is still challenge to the medical profession. Current survey suggests that, in many developing countries, a large proportion of the population relies heavily on traditional practitioners and medicinal plants to meet the primary health care needs. Although modern medicine may be available in these countries, herbal medicines have often maintained popularity for historical and cultural reasons. Human beings and their ancestors have always been afflicted by disease. It is quite possible that human beings are relied on medicinal plants for a considerable time. Sofowara reported that even as early as 5,000 years ago, human beings were aware of the medicinal properties of plants. A number of important modern drugs like atropine, morphine digoxin originally discovered through observation of traditional cure methods of indigenous people. 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 effect⁴ (Takahashi 1998). The advent of modern or allopathic medicine turned attention of scientist increasingly from plant sources to synthetic preparation as

the basis for modern drugs⁵. The traditional system of medicine in India claims a number of herbal drugs for hair growth promotion, however lack of scientific evidence limits their use. The

TYPES OF ALOPECIA⁶:-

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.

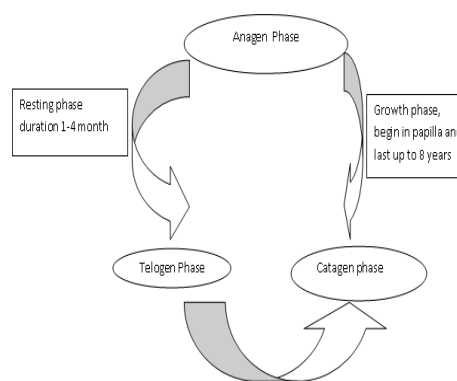
Ophiasis Alopecia Areata - Ophiasis type of alopecia areata shows a band like hair loss. It occurs mostly in the temporal or the occipital regions of the scalp, and therefore it is more difficult to treat, as most medicines have a delayed action on these areas.

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

Growth cycle [7,8]:-



cause permanent loss of follicles, affected area known as scarring alopecia.

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

Traction Alopecia - Hair style that tie hairs so tight can causes much traction at the root of hairs, and can develop traction alopecia

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.

Hair loss due to side effect of the beauty treatments- Any beauty treatments like hair colors, 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 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.

Table.1: Various allopathic medicine along with their mechanism and adverse effect⁹

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	5- α -reductase	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 contraceptive	Reduce the production of ovarian androgens	Headache
Oral corticosteroids (prednisone)	Unknown	Headache
Topical corticosteroids (betamethasone, clobetasol, triamcinolone,)	Unknown	Unknown
Anthralin	Antimitotic	Stains the skin a yellowy-brown

SOME SCIENTIFIC STUDIES

- [1]. Naryan et al. investigated the therapeutic potential of *Psidium guajava* and its polyherbal formulation on chemotherapy induced alopecia. The hydroalcoholic extract of *Psidium guajava* at the dose of 300mg/kg were tested for its hair growth activity in mice. Alkaline phosphatase level in control was 93.66U/L and this level was decreased in toxic group. *Psidium guajava* extract at the dose of 300mg/kg orally and 5% solution topically increased the level of Alkaline phosphatase and hair density in chemotherapy induced alopecia mice³³.
- [2]. Dixit et al. investigated hair growth activity of a mixture of *Eclipta alba hassak*, *citrullus colocynthis* shared and *Tridex procumbens*³⁴
- [3]. The methanolic extract of *Eclipta alba* were screened for its hair growth promoting activity in C57/BL6 mice

- by kanika et al. Methanolic extract of *Eclipta alba* at the dose of 3.2 mg/15cm² and 1.6mg/15cm² was applied in mice and compared with standard drug minoxidil. Both the dose of extract improves the growth of hair in a dose dependent manner. The percentage improvement of hair growth at the dose of 3.2 mg/15cm² was similar like minoxidil.³⁵.
- [4]. Green tea contains a high amount of purine alkaloids, flavonoids, caffeic acid derivative, volatile oil and catechins including epigallocatechin gallate. Epigallocatechin gallate isolated from the leaves of *Camellia sinensis* and investigated for its effect on human dermal papilla cells *in vivo* and *in vitro*. The Epigallocatechin gallate showed significant result by increased hair growth *in vitro* by up regulating

phosphorylated ERK and Akt and by increasing the BCl-2/Bax ratio³⁶.

- [5]. Ethanolic extract and petroleum ether extract of *Citrullus colocynthis* were evaluated for hair, growth activity on albino rats by Roy et al. 2% and 5% of ethanolic and petroleum ether extract ointment were applied on the skin of rats. The hair growth initiation was found on 4th day with 5% and 5th day with 2% petroleum ether extract group while hair growth initiation was found on the 6th with menoxidil treated group. The rate of hair growth initiation was found to be in ethanol extract treated group but it was less as compare to petroleum ether extract³⁷.
- [6]. Rhodes et al has investigated the *Primula obconica* leaf for its hair growth activity on human volunteers. The patient was firstly sensitized to *Primula obconica* by wearing a leaf then in one group given corticosteroids was used and in another group *Primula obconica* was applied after one month of treatment it was found the *Primula obconica* was much more effective than corticosteroids³⁸.
- [7]. *Zizyphus jujube* essential oil from seeds was investigated for its potential role on hair growth by in vivo method. Different concentration of essence oil was applied over the shaved skin of mice for 21 days. After 21 days mice treated with different concentration of essence oil of *Zizyphus jujube* showed a significant result for length of hair, hair thickness and hair follicles³⁹.
- [8]. Polyherbal ointment of *Emblica officinalis*, fruit *Centalla asiatica* leaf, *Aloe vera* leaf, *Ocimum sanctum* leaf, *Eclipta alba* extract were evaluated for hair growth activity. The ointment was applied topically on shaved skin of rats and evaluated for various parameters like hair length, hair density and total serum protein estimation. Polyherbal ointment showed significant result as compare to single hydroalcoholic extract of different extract of various plants⁴⁰.
- [9]. Hair formulation of *Emblica officinalis* *Bacopa monneri*, *Trigonella foneumgraecum*, *Murraya Koenigii* was investigated for its hair growth activity by Milind et al. various concentration between 1-10% of oil were prepared by three different techniques and tested for hair growth activity. The result showed a hair growth activity in a dose dependent manner. Excellent results of hair growth were found to be in a formulation which was prepared by cloth pouch decoction method⁴¹.

CONCLUSION

In the present era, we have various types of allopathic drugs to treat hair loss but they have many side effects. Herbs are the starting material for any medicine research. Approximately about 80% of population

recommends herbal drugs for their beneficial effects along with fewer side effects as compared to synthetic drugs. 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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Table..2: Herbs used for the treatment of alopecia [10-32].

Sr. no	Name	Biological name	Family	Parts used	Chemical constituents	Action
1	Amla	<i>Emblica officinalis</i>	Euphorbiaceae	Fruits	Vitamine C	Antioxidant
2	Brahmi	<i>Bacopa monneiri</i>	Scrophulariac-ae	Whole plant	Alkaloids, saponin and steroids	Antioxidant
3	Brahmi	<i>Centella asiatica</i>	Umbelliferae	Whole plant	Vallarine, asiaticoside, bacogenin, Monnierin	Not known
4	Amar Bail	<i>Cuscutta reflexa</i>	Convolvulaceae	Stem	Cuscutin, cuscutalin, luteolin kaempferol	Inhibit the enzyme 5-alpha reductase
5	Dong guai or chinese <i>Angelica</i>	<i>Angelica acutiloba</i>	Umbelliferae	Root	Valeric acid, angelic acid, saferol and angelicitin	Decrease the production of DHT

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6	Bhringraj	<i>Eclipta alba</i>	Asteraceae	Leaves		saponin, alkaloids, ecliptine, wedelic acid, luteolin, triterpine, glycosides and flavanoids	By converting hair follicles from telogenic phase to anagenic phase.
7	Garlic	<i>Allium sativum</i>	Alliaceae	Fruit		Alliins, fructosans, saponins	Affect the immune response
8	Green tea	<i>Camellia sinensis</i>	Theaceae	Leaf		Catechins	Inhibit 5- α -reductase enzyme.
9	Gambhari	<i>Gmelinia arborea</i>	Lamiaceae	Fruit		Gmelinol, β - sitosterol, hentriacontanol	Not known
10	Horsetail	<i>Equisetum arvense</i>	Equisetaceae	Aerial parts		Silicic acids, silicates, flavonoids, alkaloids and phytosterols	It contains the silica which promotes hair growth and improve the quality and condition of the hair.
11	Gurhal	<i>Hibiscus rosa-sinensis</i>	Malvaceae	Leaf and flower		Hibiscetin, cyaniding, cyanin glucosides, flavonoids, Taraxeryl acetate, β -sitosterol, oxalic acid	May be due to converting hair follicles from telogenic phase to anagenic phase.
12	Nettle root	<i>Urtica dioica</i>	Urticaceae	Leaves and roots		Lipid and minerals	It blocks the action of two enzyme 5-alpha reductase and aromatase. It also Stimulate hair follicles.
13	Primula	<i>Primula obconica</i>	Primulaceae	Leaves and flower			Act as irritant and increase the blood circulation at the site.
14	Black pepper	<i>Piper nigrum</i>	Piperaceae	Fruits		Chavicine, piperine, piperidine, piperitine	Act as irritant
15	Guava	<i>Psidium guajava</i>	Myrtaceae	Leaves and fruit		Vitamin A vitamin C iron calcium oxalic and malic acid, flavonoids, α pinene, β pinene etc.	
16	Red pepper	<i>Capsicum annum</i>	Solanaceae	Fruits		Capsicin, flavonoid, steroidal saponin etc	It increase the production histamine that help to increase cell division and hair growth it also act as Skin irritant
17	Saw palmetto	<i>Serenoa repens</i>	Arecacea	Fruit		Fatty acid, sterol compounds, polyphenols,steroids, flavonoids,volatile oil and essential oil	Decrease the production of DHT and inhibit the binding of DHT to its cell.
18	Black nightshade	<i>Solanum indicum</i>	Solanaceae	Fruit and leaves		Polyphenols, gentisic acid, luteolin, apigenin, kaempferol salasonine diosgenine carpestrol	Not known
19	Onion	<i>Allium cepa</i>	Alliaceae	Bulb		Alliins, fructosans, flavonoids and steroid saponin.	Onion juice induces immunological reaction possibly as mild dermatitis which induces hair growth.
20	Ber	<i>Zizyphus jujube</i>	Rhamnaceae	Fruits		Triterpenes, zizphus saponins, jujuboside B, saposin and swertisin.	Not known
21	Tulsi	<i>Ocimum sanctum</i>	Lamiceae	Leaves		Tannins, alkaloids, eugenol, ursolic acid thymol, linalool	Not known
22	Ghamra	<i>Tridex procumbens</i>	Asteraceae	leaves		Alkaloids, flavonoids, carotenoids, fumaric acid luteolin	Not known