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Therapeutic Potential of Some Medicinal Plants in Alopecia

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Abstract:- Alopecia areata, is a state which is also known as spot hairlessness. In alopecia areata hairs are lost from a few or all regions of the body. Frequently it brings about a couple of bare spots on the scalp. Alopecia is anautoimmune disease. The occurrence of hair loss is dependent on age and race, its incidence increases by age. It is affecting the whole scalp called alopecia totalis and affecting the entire body is called as alopecia universalis. It is also subdivided into three phases they are anagen phase, catagen phase and telogen phase. The incidence values have various ranges from 16–96%, depending on the age group. There are various different causes for hair loss and the pathogenesis is yet not completely understood. The predisposed scalp shows high level of dihydrotestosterone and increased symptom of the alopecia areata. Alteration of testosterone to dihydrotestosterone within the dermal papilla plays an essential part. The medications offered incorporate both synthetic and natural products to treat the state of alopecia. Natural products extracts are constantly acquiring popularity mainly due to their less side effects and better formulation process. The Medicinal Plants have been generally utilized for hair development advancement since antiquated circumstances as announced in Unani, Ayurveda and Chinese system of medicines. This review covers information about varioustypes of herbs that are assumed to be decrease the rate of hair loss and at the same time stimulates new hair growth.

Keywords:- *Alopecia, Anagen, DHT (Dihydro testosterone) and Medicinal plants.*

I. INTRODUCTION

The word "alopecia" is the therapeutic term for hair loss. Alopecia or hair loss does not consign to one precise hair loss disease, any type of hair loss is alopecia. Alopecia or hair loss is a disesase in which the hairs are falls out from the areas where they are generally present, such as the entire scalp and the body. Alopecia, hair loss is a dermatological disorder and is a psychologically distressing condition [1]. The most widely form of hair disorder is termed as alopecia which is repeatedly used to express the patterned loss of scalp hair in hereditarily vulnerable men and women. In Ayurveda, hair loss is named as “Khalitya”. Alopecia areata is named as “Indralupta”. Ayurveda herbal treatment is aimed at treating known causes, immuno- restoration, treating the nearby scalp situation and decreasing anxiety.

In mammals, hair plays an essential role in warm protection and for social and sexual dispatch, both visually and as a method for disseminates fragrances concealed by skin glands. Some diagnosis has alopecia in their titles like alopecia areata or scarring alopecia, yet numerous don't, like telogen effluvium [2]. It has been proposed that alopecia could adversely affect physiological life and confidence between both the sexes. In spite of the fact that the side effect is related with this drug has limited its pharmacological advantages consequently, the medication of plant source is essential to change the synthetic one.

Alopecia areata starts abruptly and causes patchy hair loss in children’s and immature adults. This situation may results in complete baldness in scalp called Alopecia totalis and hair loss from whole body including the eyelashes, pubic hair and eyebrows (Alopecia universalis). Alopecia areata is also associated with Hashimoto’s thyroiditis and Basedow’s disease (other autoimmune diseases).[3]

II. EVERY HAIR GROWS IN THREE CYCLIC STAGES

- Anagen (Growth phase) – The growth stage can be as small as 2 years to as long as 8 years. About 80% of balding is commonly seen in growth phase.
- Catagen (Involution phase) – In the involution stage, the growth activity increases and hair move to the next stage, this remains between 10-14 days.
- Telogen (Resting phase) – The resting stage lasts for 90-100 days. In general, 50-100 hair at random is fall every day. An increase of more than 100 hairs per 6- constituents a state of alopecia [4].

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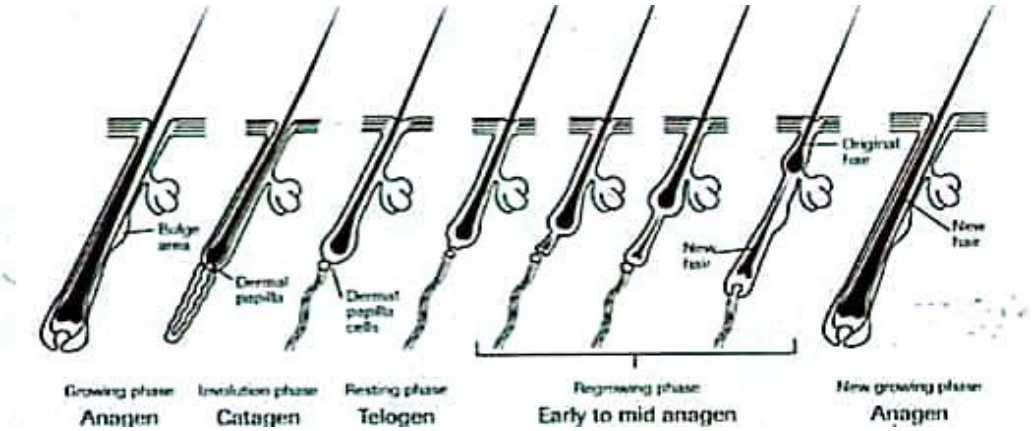

Fig 1:- Normal Human Hair Cycle

- *Androgenetic alopecia (AGA)* - Androgenic alopecia is hereditary manifestation caused due to androgens in hereditarily vulnerable men and women. AGA is believed to be the most universal type which is characterized by progressive hair loss. In males and females, when it affects the males then it is called as male pattern hair loss (MPHL) and if it is affecting females then it is called as female pattern hair loss (FPHL). In males, the hair loss regularly introduces as a receding hairline while in females it typically shows as a thinning of the hair. AGA is described by stepwise miniaturization of the hair follicle, resulting from modification in the hair cycle dynamics, leading to vellus alteration of the terminal hair follicle. In hereditarily vulnerable hair follicles, the Dihydrotestosterone binds to the androgen receptor and the hormone receptor complex, activating the genes responsible for the alteration of the normal hair follicles in miniaturized follicles [4, 6].

- *Alopecia areata*- It is a chronic inflammatory dermatological disorder described by patchy loss of hair without atrophy. Alopecia areata is seen in any area of the body, with a multifactorial autoimmune pathogenesis and an unknown aetiology. If it affects the entire scalp then it is called as *alopecia totalis* and if hair losses from the entire body then it is called as *alopecia universalis.*

25% of alopecia cases are record by the dermatologists and it is one of the most universal forms of alopecia [7].

- *Telogen Effluvium*- The term Telogen effluvium was first coined by Kligman, and the telogen hair is a resting hair with non pigmented club tip at the proximal root and simply plucked from the scalp. In this condition, untimely transformations of anagen hair to telogen hair takes place resulting in disproportionate shedding and reduce in the total number of hairs. [8].

- *Types of Alopecia*-

- *Alopecia areata (Primary stage)* - Alopecia areata is a universal autoimmune condition that results hair loss in the scalp and to entire body. It generally starts with more than one minute, round, non- scaring patches. Risk factors contain a family history of the condition. Among identical twins, if one is affected by the alopecia areata then another one has 50% chances of being affected. [Fig- 2].
- *Mild Transient Alopecia areata*- In this type of alopecia or hair loss patients lasted longer than those with primary alopecia areata and at a time associated with seasonal recurrences. Mild transient alopecia never changes into *alopecia universalis* or *alopecia totalis*. [Fig- 3].

- *Transient Alopecia areata*- Transient alopecia areata in progressive stage may converts into *alopecia totalis* or *alopecia universalis* and it is also known as a chronic state. [Fig- 4].

- *Ophiasis Alopecia areata*- In this form of ophiasis alopecia hair loss is seen like a band. It happens generally in temporal or the occipital regions of the scalp, and hence it is more complicated to treat, as most medication have a delayed action on these areas[Fig- 5].

- *Alopecia totalis*- In this type of alopecia hair loss is seen in entire scalp [Fig- 6]
- *Alopecia universalis* In this type of alopecia, hair loss is seen in entire body [Fig- 7].
- *Scarring alopecia*- It is caused by any inflammatory process (burns, bacterial infections, ringworm, autoimmune diseases) which may cause permanent damage to the follicles [Fig- 8].

- *Tricotilomania*- In this type of hair loss or alopecia the patients himself or herself pulling his/her own hairs [Fig- 9].

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- *Traction alopecia*- In this type of Traction alopecia the hairs are tied so tightly that cause a traction at the roots of the hairs [Fig- 10].

- *Chemotherapy and hair loss*-

Chemotherapy is selective treatment for disease patients but it affects normal cells and hair follicles too. This causes alopecia and known as anagen effluvium form of alopecia. [Fig- 11].

- *Diffuse alopecia*- Extreme hair loss all over the entire scalp without producing a patch is known as diffuse alopecia[Fig-12] [4].

Fig 2:- Alopecia areata

Fig 3:- Mild Transient

Fig 4:- Transient

Fig 5:- Ophiasis

Fig 6:- Alopecia totalis

Fig 7:- Alopecia universalis

Fig 8:- Scarring alopecia

Fig 9:- Tricotilomania

Fig 10:- Traction alopecia

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Fig 11:- Chemotherapy

Fig 12:- Diffuse Alopecia

- *Disorders of hairs:* The main problems for hairs disorders are pigmentation dandruff, falling of hairs and balding.

S.No.	Disease	Etiology	Clinical Features	Treatment
1.	Anagen effluvium	Secondary to cytotoxic drugs like Thallium, bismuth, arsenic, Cell division inhibition in hair follicle.	Loss of all hair on scalp	Scalp cooling
2.	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. Can get up to years to grow Back
3.	Alopecia Areata	Genetic Factor, Autoimmune disease	Circular patches of hair loss, Hairs grow back white.	Inject steroid (kenalog)
4.	Traction alopecia	Hair styling like Pony tails.	-	Hair grafts
5.	Androgenic Alopecia	Male and female pattern baldness	Beginning with bitemporal recession, bald patch	Rogaine (Minoxidil), Propecia (Finasteride), Transplants.
6.	Trichotillomania	Pulling hair out	Chronic, repetitive hair pulling	Self-monitoring, Stimulus control, Habit-reversal training

Table 1. Common disorder of hair

III. CAUSES OF ALOPECIA

It is a contentious issue as there is no common agreement regarding what are the main factors that cause loss of hair. Various factors contributing to alopecia includes genetic predisposition, hormonal factors, and disease states such as typhoid, malaria, jaundice, and use of chemotherapeutic agents (Fig13).

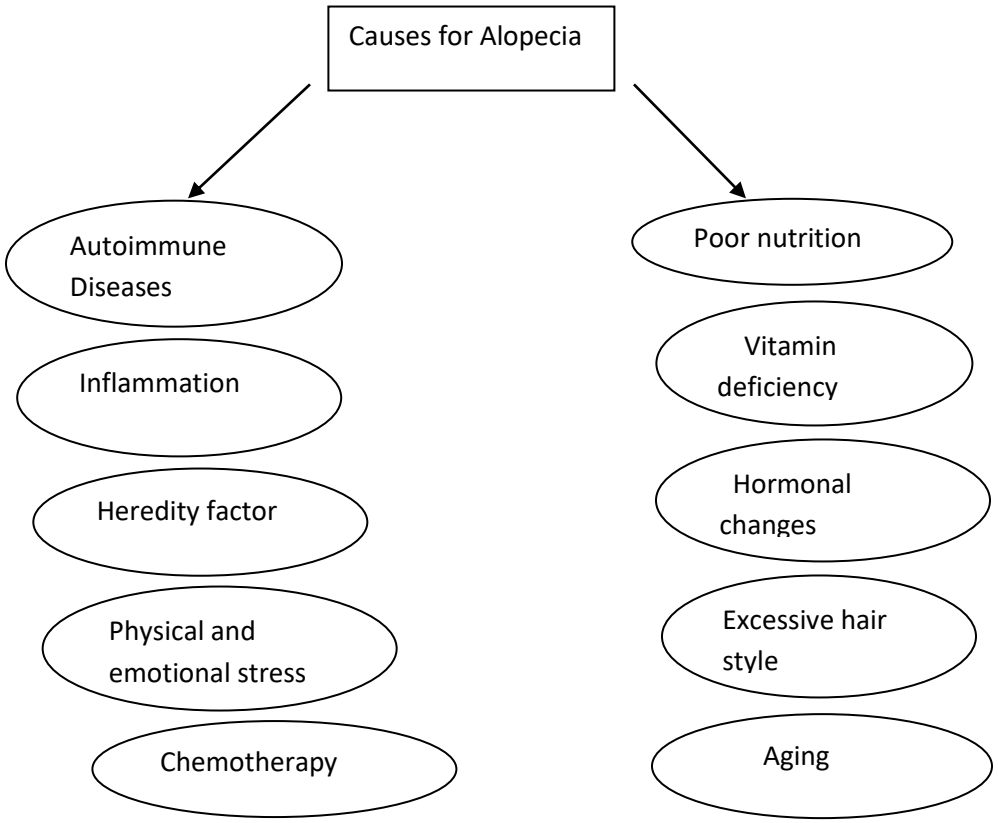

Fig 13:- Common causes that promote the alopecia [10].

IV. BRIEF DESCRIPTION OF MEDICINAL PLANTS

There are various natural medicinal plants which are used as hair growth promoters, hair tonic and conditioner, hair cleansing agent, anti-dandruff agents and a number of various natural medicinal plants have been acclaim with hair growth promoting activity.

A. Emblica officinalis (Amla): (Euphorbiaceae)

- *Part used- Fruit*

It is one of the most popular herbs used in Indian homes and texts of indigenous medicine. It is found throughout India, hill slopes up to 200m and the sea coast districts and also cultivated in plains [11]. The fruits contain tannins and also contain Emblicanin A and B, which have antioxidant properties, and one on hydrolysis gives gallic acid, ellagic acid and glucose while the other gives ellagic acid and glucose only. Emblica is used to promote the growth of hair in traditional medicine [12]. Emblica is reported to improve the iron metabolism. It is essential for normal hair growth and for the protection of healthy hair. Iron deficiency leads to hair loss because of oxygen deficiency [13]. Amla fruit is largely used in Indian medicine. It is used as an acrid, diuretic, refrigerant and Laxative. Dried fruits are given for diarrhoea and dysentery. They also administered in jaundice, dyspepsia and anaemia along with iron compound [14].

B. Eclipta alba (Bhringraj): (Asteraceae)

- *Part used- Whole plant.*

Eclipta alba is also known as Bhringraj and it is a small branched perennial herb. It is found in India, China, Taiwan, Philippines, Japan and Indonesia. The principal constituents of Eclipta alba are coumestan derivatives like wedelolactone (1.6%), dimethyl wedelolactone, desmethyl-wedelolactone-7glucoside, ecliptal, stigmasterol. This herb usually used in ayurvedic medicine and having positive effects on hair growth, diabetes and eye health. Bhringaraj is a well- known hair tonic for keeping hair dark for regaining lost hair. Eclipta alba decocted in coconut oil is referred as 'cooling' oil. It is used externally for 'hot' and inflammatory. It is valuable to calm the mind and memory disorder. Bhringraj strengthens the spleen and is a general tonic [15, 16].

C. Tridax procumbens (Ghamra): (Asteraceae or Compositae)

- *Part used- Leaves*

It is an annual or perennial weed from Central America and found throughout in India especially in Maharashtra, Madhya Pradesh and Chhattisgarh regions as a weed. Tridax

procumbens belongs to the family Asteraceae or Compositae. Tridax procumbens has been introduced to tropical, subtropical and mild temperate regions worldwide. Tridax procumbens contains flavones glycosides, chromone glycoside, sterols and polysaccharides with a Beta- 1, 6-D-galactan main chain. The Unsoponification fraction of petroleum ether fraction revealed the presence of campesterol, stigmasterol and beta- sitosterol by GC-MS. The whole parts of the plant are also used in the treatment of alopecia [17, 18].

D. Acacia concinna (Shikakai): (Mimosaceae)

- *Part Used- Leaves and Pods.*

Acacia concinna is grown commercially in India and Far East Asia. Acacia concinna is important medicinal plants family Mimosaceae. When the plant of shikakai is hydrolyzed it produces spinasterol, acacic acid, lactone and the natural sugars glucose, arabinose and rhamnose. It also contains oxalic acid, tartaric acid, citric acid, succinic acid, ascorbic acid. The leaves, barks and the fruit pods of Shikakai are dried, powdered and made into a paste at home to apply on hair. Daily uses of shikakai will strengthen your hair strands and reduce hair fall. It also helps to get rid of dandruff and scalp problems. It is rich in Vitamin C and also in Vitamin A, D, E, K and other antioxidants which are essential for healthy and quick growth of hair naturally. These Vitamins helps in providing necessary micronutrients to the hair follicles to nourish hair and grow fast and healthy [19, 20].

E. Hibiscus rosa- sinensis (China rose): (Malvaceae)

- *Parts used: Leaves and flowers.*

It is usually grown throughout the tropics and subtropics regions. Hibiscus rosa- sinensis is one of many plant species with a genetic feature known as polyploidy. Flowers contain thiamine, ascorbic acids, vitamins, leaves and stems contain beta sitosterol, stigmasterol, taraxeryl acetate and three cyclopropane compounds and their derivatives. Flowers are demulcent, emollient, and aphrodisiac, refrigerant. The flowers buds are cooling and astringent; remove burning of the body, piles, seminal weakness and urinary discharges. Leaf extract has a prospective effect on maintaining the hair growth in- vivo and in-vitro methods [21].

F. Centella asiatica (Brahmi booty): (Alpiaceae)

- *Part used- Leaves*

Centella asiatica is a very small aromatic plant, special to India. It is native to Indian subcontinent, wetland regions of the South-eastern US and Southeast Asia. This plant grows in marshy areas and also near natural water. Brahmi booty contains asiatic acid, brahmic acid. Other chemical constituents are centellose, centelloside, and madecassoside. The leaves of Centella asiatica is used to treat the bacterial, viral, parasitic infection such as urinary tract infection, leprosy, cholera, dysentery, syphilis, common cold, influenza, tuberculosis. Centella asiatica is also used for fatigue, anxiety, depression, alzheimer's disease and improving memory. It is also very prominent for the managing of alopecia. It acts as a stand for hair growth. It plays a very imperative role in strengthening the hair follicles and nourishing the scalp [22].

V. CONCLUSION

In the present article, an endeavour has been made to emphasize on herbal selection for treatment of alopecia. Alopecia is a universal and ever-increasing problem in cosmetics as well as primary. health care practice. Hair loss fatalities spends billions of dollars annually on remedies ranging from drugs, vitamins to special hair growth tonics and shampoos, Besides having hair growth promotion effect, treatment with the synthetic drug has develop into questionable due to their infrequent lack of efficacy, safety and their prospective side effect. This has prompted to increasing importance in different remedies such as herbal medicine. Herbal drugs give a new uprising for hair growth. In this review, we summarized that some of the herbal plants are believed to reduce the rate of alopecia and at the same time stimulate new hair growth.

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