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Review Article

Exploring the Importance of Medicinal Herbs in the Treatment of Hair Loss

Madhushree V. Darge*, Amol S. Deshmukh

Indrayani Vidya Mandir's Krishnarao Bhegade Institute of Pharmaceutical Education & Research, Talegaon Dabhade, Pune- 410507, India.

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ABSTRACT

Alopecia areatatisis an autoimmune disease that causes patchy of hair loss. Herbal drugs are used internally as well as externally to prevent premature grayish or hair loss. Alopecia is one of the major problems amongst urban people to subjection to stress environmental problems etc. According to Ayurveda, pitta dosha is the primary cause of hair loss. Pitta dosha could be reversed through diet and lifestyle modifications. Ayurvedic medicine for hair loss contains herbs that can arrest hair fall and improve hair growth. Herbal cosmetics have growing demand on the earth market and are a precious gift of nature.

INTRODUCTION

Hairs are the improved epithelial structure formed as a result of keratinization of germinative cells (Pundkar et al., 2020). Hair is an important component of body image. It is one of the few bodily attributes that we can alter and control to fit the needs of society and style. The physical and mechanical characteristics of hair, which are influenced by the composition of proteins and internal structural organization, are frequently changed by hair cosmetics (Sinclair et al., 2007). Human hair depending on its moisture content (up to 32% by weight) consists of approximately 65% to 95% proteins. Proteins are condensation polymers of amino acids and the structures of those amino acids found in human hairs. The remaining components are pigment, structural and free water lipids, and trace elements, which are typically not free. But in combination with side chains of protein groups or with fatty-acid groups of lipid (André Meyers et al., 2017).

Hairs are two types:

1. Vellus hair
2. Terminal hair

- Vellus hairs are straight, thin, and pale in color.

***Corresponding Author:** Madhushree V. Darge
Address: *Indrayani Vidya Mandir's Krishnarao Bhegade Institute of Pharmaceutical Education & Research, Talegaon Dabhade, Pune- 410507, India.*
Email : madhushreedarge@gmail.com

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- The thicker, darker, and sometimes curled terminal hair is seen on the brows and eyelashes.

Ayurveda has described hair diseases in three words.

1. Indralupta means Alopecia areata, alopecia total is and Alopecia universalis.
2. Khalitya means loss of hair.
3. Palitya means premature hair graying (Osama et al., 2024).

Hair loss-

Hair loss is the thinning of hair on the scalp. The medical term for hair loss is alopecia. Alopecia can be temporary or permanent. The most common form of hair loss occurs gradually and is referred to as "androgenetic alopecia," meaning that a combination of hormones and heredity s needed to develop the condition (Singh et al., 2016).

History of Hair Loss-

It has been suggested that Alopeciaareata (AA) is described in the ancient Vedas (5000-400 BCE) of Ayurvedic medicine, though it is difficult to confirm the chronological provenance. The first known and safely claimed history of AA is recorded in the "Ebers Papyrus". Found between the legs of an Egyptian mummy believed to date to 1500 BCE,papyrus is the most extensive record of ancient Egyptian medicine to date. It is primarily a list of medical treatments for use in the lifetime. In different locations, there are brief listings for hair loss which is believed to refer to patchy AA (David et al., 2020).

Herbs for hair loss –

A lot of Allopathic, Ayruvedic and Homeopathic products are available in the market some of them are formulated from the natural herbs extract as their basic ingredients (Jain et al., 2017). 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 that promote hair growth (Olsen et al., 1993).

Symptoms of Hair Loss -

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

- Acute illness
- Sudden weight loss
- Prescription drugs
- High iron deficiency
- Psychological
- Nutritional deficiencies
- Radiation exposure
- Other fungal infection
- Ringworm
- Physical trauma to the scalp
- Skin disease
- Stress
- Psychological

Common causes -

- Fever
- Postpartum
- Rash
- Dieting
- Thyroid dysfunction
- Iron deficiency
- Prolonged operation & anesthesia
- Malignant disease
- Renal failure
- Hepatic disease
- Malabsorption
- Medications (Srivastava et al., 2015).

Types of hair loss:

Hair loss is more than just a cosmetic problem; it can also cause mental and self-perception problems. The most common causes of hair loss are:

- Non-cicatricial (potentially reversible)
- Cicatricial
- Due to hair shaft abnormalities (Jabeen et al., 2023).

Non-cicatricial alopecia-

(Loss of hair without any scarring being present)

The event starts the process 3 to 6 months before the shedding begins. Acute shedding was initially described after febrile diseases, childbirth, chronic systemic diseases, use of heparin, and emotional distress. To treat telogen effluvium, the cause or causes must be isolated and treated. Patients should always be reassured that their hair is being replaced and that the chances of balding are small. Alopecia areata is hair loss with the possibility of regrowth.

Noncicatricial alopecia, several sub types:

- Telogen effluvium (shedding)
- Androgenetic alopecia (common baldness)
- Alopecia areata (isolated or recurrent patchy hair loss)
- Traction alopecia (caused by tight braiding) and compulsive hair-plucking) (Brenner et al., 2003).

Telogen effluvium-

The most common cause of hair loss is shedding or telogen effluvium (TE), which is the premature conversion of growth-phase hair follicles to the resting or shedding (telogen) phase. Acute excretion was initially described after febrile illnesses. The most common cause of hair loss is shedding or telogen effluvium, which is the premature conversion of growth-phase hair follicles to the resting or shedding (telogen) phase. Acute shedding was initially described after febrile diseases. The most common cause of hair loss is shedding or telogen effluvium (TE), which is the premature conversion of growth-phase hair follicles to the resting or shedding (telogen) phase. Acute excretion was initially described after febrile illnesses. The most common cause of hair loss is shedding or telogen effluvium (TE), which is the premature conversion of growth-phase hair follicles to the resting or shedding (telogen) phase. Acute shedding was initially described following febrile illness, childbirth, chronic systemic illness, heparin administration, and emotional stress (Brenner et al., 2001). The primary sign reported by the patient is shedding Patients usually report increased hair on shower drain, clothes, or pillow. The daily hair-shed counts are higher than the normal. Hair shed counts on a non-shampoo day is up to about 100 in normal individuals. Decreased hair volume may be noticeable when hair density is reduced as much as 30% to 50% (Rebora et al., 1997).

Androgenetic alopecia -

The pattern of hair loss is quite variable. One common pattern in both men and women is the M-pattern, characterized by frontal recession with thinning or absent hair in the temples. Another pattern, more common in women, is a reduced density of hair on the head in the central area with preservation of the frontal hairline (Muthuvel et al., 2021) The diagnosis of AGA is based on the clinical picture and family history. Hormonal examination is necessary if an excess of androgens is suspected due to the presence of acne, hirsute and, in women, irregular menstruation. Androgens, such as dehydrotestosterone (DHT) and sulfonated dehydroepiandrosterone, influence hair loss. The most effective androgen, DHT, reduces the amount of hair on the head and increases the amount of body and genital hair. This hormone has been one of the targets when treating AGA (Masahiro et al 2023).

Alopecia areata -

Alopecia areata (AA) is hair loss of suspected autoimmune origin with an unpredictable prognosis. AA causes isolated or recurrent patchy hair loss Multiple patches, complete scalp hair loss (alopecia totalis), and complete scalp and body hair loss (alopecia universalis) are other clinical presentation of AA (Thefilopulos et al., 1995). The affected hair sheds and no replacement is seen while the inflammation is present. The first hair to regrow is thin and light in color (vellus hair), this hair is often replaced by thick white hair before the normal color hair (terminal hair) regrows. Alopecia areata occurs in 1.7% of the population(

Paus, Nick&Goodnow ,sprent , Fazekars et al 2005).Genetic factors have an important role in the origin of AA and family history of AA occurs in 10% to 42% of the cases (Ito et al., 2006; Shander et al., 2008).

Traction alopecia -

Traction can physically damage the hair shaft and also alter the hair growth cycle. If traction is repetitive and chronic, scarring alopecia may occur. Practices such as tight braiding, wearing ponytails or elastic hair bands, using rollers, or other devices that place extreme and repetitive stress on the scalp hair are responsible for most cases. Traction alopecia causes sparse hair and hair breakage in the frontal area (Goren et al., 2019).

This condition is quite common in women with curly hair, especially African-Americans. Trichotillomania (TM) is a traction alopecia where the patient repeatedly pulls or plucks the hair in a bizarre pattern. The cause may not be obvious; it can range from an underlying emotional problem to a definite mental disorder. It is unusual for a patient to admit or state their own history of hair pulling. The condition is frequently seen in children, when pulling is often due to insecurity and not a sign of psychiatric illness (Refu et al., 2018).

- **Cicatricial alopecia-**

(An inflammatory condition that destroys hair) Cicatricial alopecia is irreversible hair loss associated with the destruction of the stem cell reservoir located in the center of the follicle.The evaluation of Cicatricial alopecia of unknown origin starts with cultures for bacterial and fungal infection. Diagnosis is based on scalp biopsy; A 4 mm punch biopsy is recommended (Bergfeld et al., 1996).

- **Hair shaft abnormalities-**

(Change in color, density, length and structure) Hair shaft abnormalities produce fragile and brittle hair. Patients may have diffuse or patchy areas of short hair and a history of hair that does not exceed a certain length.

Repeated trauma to the hair shaft from traction, bleaching, perming, or blow-drying is most often the cause of the hair shaft abnormality in adult.

Treatment:-

A. Phyllanthusembellica (Phyllanthaceae)

Phyllanthusemblica is an important medicinal plant in Indian traditional system of medicine (Chaurasiya et al., 2024). The tree is of 1-8 meter in height. The leaves are simple and intently set alongside branch lets. Flowers are of greenish yellow colour. The fruits are almost round in shape and hard in appearance (Jain et al., 2015).

Kingdom -

Division-

Angiosperm

Class-

Dicotyledonous

Order-

Geranial's

Family-

Euphorbiaceous

Genus-

Emblica

Species-

Geartn officinalis (Desouky et al., 2009).

Morphology -

Its biological source is Phyllanthusemblicait grows in tropical and subtropical areas of China, India, Indonesia and Thailand. It contains Vitamin Cchebulic acid, pedunculagin and punigluconin. One of the best things you can do to prevent hair fall is to massage your hair with amla oil it increases the blood circulation throughout the scalp. The Amla tree is a small to medium sized deciduous tree with an average height of 8-18 m, with thin light gray bark exfoliating in small thin irregular flakes that reveal fresh surface of a older bark. The average birth of the main stem is 70 cm. In most cases, the main stem is divided into 2 to 7 scaffolds very close to the base. (Raham et al.,

2007).The leaves are 10-13 mm long, 3 mm wide, closely set in a pinnate fashion, making the branches generally felty. After setting of the fruits leaves develop. Flowers are unisexual, 4 to 5 mm in length, pale green in color, borne in leaf axis in clusters of 6 to 10. Fruits are fleshy, almost depressed to globose shape, 2.1-2.4 cm in diameter, 5.3-5.7 g in weight, 4.5-5.0 mL in volume. The stone of the fruit is 6 ribbed,splitting into three segments, (Rajak et al., 2004). Each containing usually two seeds, seeds are 4-5 mm long and 2-3 mm wide, each weighing 572 to 590 mg (Mirunalini et al., 2010).

Leaves –

It contains gallic acid, chebulic acid, ellagic acid, chebulinic acid, chebulagic acid, amlic acid, alkaloids phyllantine and phyllantidine (Singh et al., 2010).

Seeds –

A fixed oil, phosphatides and a small quantity of essential oil. It contains linolenic acid (8.78%), linoleic (44%), oleic (28.40%), steric (2.15%), palmitic (2.99%) and miristic acid (0.95%).

Barks-

Contain leukodelphinidin, tannin and proanthocy-anidin (Srivasuki et al 2012).

Roots –

Contain ellagic acid and lupeol.

Constituents-

VitaminC, Phyllemblin, Tannin, Phosphorous, Iron, Calcium

Mode of Action-

Indian gooseberry oil, prepared by boiling dry pieces of Indian gooseberry in coconut oil, is considered a valuable hair tonic for enriching hair growth. A mixture of an equal quantity of fresh Indian gooseberry juice and lime juice, used as a shampoo also stimulates hair growth and prevents hair loss.

Reason-

Iron is involved in the oxygenation of your body's red blood cells. It is essential for normal hair growth and maintaining healthy hair. If the amount of iron cannot be replaced by food intake, iron deficiency will cause hair loss due to lack of oxygen.

Uses -

VitaminC-

Reduce hairloss and improve hair growth

Phyllemblin-

- Reduce hair fall and prevent hair loss
- Help to treating dandruff
- Prevent premature graying of hair

Tannin-

- Frizz and flyway reduction
- Enhance hair growth
- Antioxidant Effect
- Improve Moisture
- Safeguarding hair color

Phosphorous-

Help to deservedness a scalp condition

Iron-

Supply oxygen for cell and tissue repair

Calcium-

Imperative for healthy hair growth (Khan et al ., 2009).

B. Alliumcepa L. (Liliaceae)

Kingdom-

Division-

Liliopodia

Class-

Liliales

Order-LiliaceaeAmaryllidaceae

Family-Liliaceae

Genus-Alliums

Species-Alliumcepal (Kumar et al., 2010).

Morphology -

The not unusual onion has one or more leafless flower stalks that attain a peak of 75- 180 cm terminating in a round cluster of small greenish white plant life. A few flower clusters produce bulbils, tiny secondary bulbs that can be used to asexually propagate new plant life.

The bulbs vary in size, shape, colour, and pungency, though warmer climates generally produce onions with a milder, sweeter flavour than do other climates (Marrelli et al., 2019).

Leaves -

Scaly leaves–

Scaly leaves are the dry, scaly, outermost part of the onion. These started as fleshy leaves over time and changed to become the way they are. The function of the scaly leaves is mostly protection for the rest of the bulb. These leaves protect the inner, softer parts of the onion bulb in opposition to pests and friction, giving the bulb room to develop.

The fleshy leaves –

Are the most consumed part of an onion. Their primary function is to store antioxidants and nutrients such as flavonoids, anthocyanins, propanethial S-oxide, dimethyl sulfate, and some vitamins and minerals (Khan et al., 2017).

Roots –

At the base of this bulb are short roots that extend a short way into the soil. These roots are called adventitious roots and are responsible for supporting the entire plant. They absorb all the nutrients and minerals that plants need. Without these roots, essentially the entire onion plant would not survive.

Constituents –

Protein (albumin), allyl propyl disulphide, diallylsulphide, alien, allicin. It also Contains some mineral like potassium, zinc, calcium, magnesium and traces of chromium.

Mode of Application –

Onion has also been found beneficial in patchy beard .The affected part should be rubbed with onion juice morning and evening till it is red. It should be rubbed with honey afterwards.

Reason-

Zinc helps to secrete the scalp with much needed oil and avoid dandruff that may cause hair loss. Iron is involved in the oxygenation of your body's red blood cells. It is essential for normal hair growth and maintaining healthy hair.

Uses-

Protein (albumin)-

Helps to increase the thickness of hair.

Zinc-

Enhance Healthy hair growth by inhibiting entry of hair follicles in catagen phase and shine.

Magnesium-

Promotes Healthy hair follicles (Chakraborty et al., 2022).

C. Duglansregia

Kingdom-

Division-

Magnoliophyta

Class-

Magnoliopsida

Family-

Juglandaceae

Genus-

Juglans

Species-

regia

Morphology -

It is obtained from JuglansRegia. It is native to the region stretching from the Balkans eastward to Himalayas and Southwest china widely cultivated across Europe. It contains hexadecane, nonacosanolpentadecane, bicyclogermacrene and spathulenol. It accelerates hair growth as an antioxidant and provides moisture to skin and scalp. Volatile flavor components of walnut constitute about 37 compounds including 6aldehydes, 6 alcohals and 5 ketones. Both immature fruits and green hulls of walnut are very rich sources of ascorbic acid.Nut trees have long compound leaves with 5 to 23 short petioled leaflets. The male and female reproductive organs are borne in different flowers without petals (Sharma et al ., 2023). Kernel-Walnut kernels, the edible component, make up about half of the total weight of the fruit. Walnut kernels are rich in

proteins, lipids and minerals and are also an excellent source of energy. It is the richest source of vitamin B-6 and has significant amounts of B vitamins. These are used raw as a good brain tonic. It is good for improving memory and longevity. It is cardio protective and prevents bone loss.

Leaves-

Nut green leaves are used for skin diseases, eye irritation, eye pain and conjunctivitis and are also used to increase poor appetite. An infusion is prepared from the leaves, which is used to wash the eyes to remove irritation and to treat conjunctivitis. The same infusion made from the leaves is also used on wounds, acne and skin allergies to heal wounds and eliminate skin diseases.

Shell –

Its powder is one of the main ingredients used in cosmetic products to treat sunburn and skin burns. Inner bark -A decoction and tincture can be made from the inner bark of the walnut tree. The decoction can be used to treat constipation and indigestion, as a liver stimulant and even to treat skin conditions.

Constituents-

Fatty acids, linoleic acid are the predominant fatty acid followed by oleic acid and linolenic acid. The other fatty acids were found in trace contents. The potassium contents were found to be higher than those of the other minerals in all kernels of the walnuts.

Mode of Application-

The application of walnut oil all over the scalp and massaging it into the hair roots is also beneficial in the treatment of hair loss. It nourishes and encourages the growth of hair.

Reason-

The fruit contains essential minerals which are helpful in the growth of healthy hair. Iron increases blood circulation and oxygen supply as stated earlier. Zinc prevents dandruff, which can lead to hair loss, and aids in the scalp's production of much-needed oil. In case of Copper, study shows that these tri-peptide complexes may actually be able to regrow hair, even in patients with total hair loss due to alopecia. Healthy tissue concentrations of copper lies between 1.7 and 3.5 milligrams of copper lies between 1.7 and 3.5 milligrams concentrations of copper lies between 1.7 and 3.5 milligrams.

Uses-

Fatty acids-

Nourishment for hair

Linoleic-

Act as an emollient for repairing rough and damaged hair

Walnut-

Improve hair texture by addressing dryness and brittleness (Karadeniz et al., 2015).

D. Aloevera(Asphodelaceae)

Kingdom-

Division- Spermatophyte

Order-Asparagales

Class- Monocotyledoneae

Family- Asphodelaceae

Genus- Aloe

Species- Barbadensis Mil

Morphology -

Its biological name is aloe barbadensis belonging to family Liliaceae it contains various minerals such as calcium, phosphorus, and potassium iron chloride. It contains vitamins such as Vitamin A, Vitamin B, Vitamin C, Vitamin E, and Vitamin M. Its chemical constituents are saponins, anthrax quinones, and amino acids (Nadkarni et al., 2004). The majority of the genus's species bear a rosette of leaves at the base of their stems or at ground level. The leaves typically have sharp teethed edges and are juicy and luscious. Some kinds of aloe keep a thick layer of dead leaves around their stems to protect them from the heat of wildfires. The color of the tubular flowers varies from white to red to yellow. Many species rely on non-hovering birds, like sunbirds, to pollinate them;

these birds land on tall, sturdy stalks that support the flower clusters of these species. The seeds are produced in dry capsules. Aloe barbadensis, a member of the Liliaceae family, is its scientific name.

Leaves-

The leaves are thick and fleshy, green to grey-green, with some varieties showing white spots on the upper and lower surface of the stem. The edge of the leaf is serrate and has small white teeth. Aloe vera leaves contain phytochemicals studied for possible bioactivity such as lignans, phytosterols, polyphenols, acetylated mannans, polymannans, anthraquinones, C-glycosides, anthrones and other anthraquinones such as emodin and various lectins.

Flowers-

Flowers are produced in summer on a spike up to 90 cm (35 in) high, each flower drooping, with a yellow tubular corolla.

Roots-

Like other Aloe species, Aloe vera forms arbuscularmycorrhiza, a root symbiosis that allows the plant better access to mineral nutrients from the soil Aloe Vera spots are pale green to white.

Constituents- Contains various minerals such as calcium, phosphorus, and Vitamin A, VitaminB, Vitamin C,Vitamin E and Vitamin M. Its chemical constituents are saponins, anthraquinones, and amino acids. Lactones (6%): Diterpenoids, Ginkgolides A, B, C, Bilobalide-A, Flavonols (24%).

Kaempferol, Quercetin, Isorhamnetin(Pegu et al., 2019).

Mode of Application –

Use raw aloe vera gel and rub it into your hair and scalp or use hair products with aloe vera as an ingredient.

Reason-

Aloe vera has many active ingredients and minerals that can help strengthen your hair. It contains fatty acids and amino acids and is rich in vitamins A, B12, C and E. These play a role in healthy hair follicles.

Uses-

Vitamin A-

Help with healthy hair growth, making it stronger and thicker

Vitamin B-

Help in hair growth by encouraging healthy cell rejuvenation through support hair follicles

Vitamin E-

- Helps to repair damage hair
- Reduce breakage
- Improve hair elasticity and shine

Vitamin M-

Folicacid (Surjushe et al., 2008).

(E).Coconut (Cocosnucifera Sinn)

Kingdom-

Division-

Magnoliophyta

Order-

Arecales

Class-

Liliopsida

Family-

Arecaceae

Genus-

Cocos

Species-

C-Nucifera

Its biological source is Cocosnucifera Sinn. It is a family in Arecaceae (Parmar& Singh et al., 2021).

Morphology -

A single coconut tree can produce 100 coconuts per year, and each fruit takes a year to fully ripen. Mature coconuts, ovoid or ellipsoid in shape,(6-8 inches) have a thick fibrous husk surrounding the familiar single-seeded nut of commerce. A hard shell encloses the insignificant embryo with its abundant endosperm, composed of flesh and fluid. Coconuts float easily and were widely dispersed by ocean currents and people in the tropics (Mandal et al., 2011; Niral et al., 2019).

Roots-

Coconut roots are commonly used in beverages and medicine. These roots are used for dye, toothbrush and mouthwash. It can also be used to treat diarrhea, dysentery and other digestive problems.

Trunk-

The feathery leaves of the tree of life appear to be useless, but they actually have other uses. The dried leaves can be used for paper pulp and brooms. It can also be used to create bags, lampshades, decorations, fans and hats. Some people in rural areas use it to cover roofs, make fences, and light fires.

Shell-

When the husk is soaked in salt water, its fibers are separated to form coir. Coconut fiber is a commonly used material in the production of ropes, mats and coarse clothing.

Spathe and Guinit –

Spathe and guinite are useful in creating headgear such as helmets and caps. It can also be used in creating handbags and bakya straps.

Flowers –

Flowers are useful in creating clothing. The sap from the flower can be used to make alcohol and vinegar. Usually the sap is boiled to make syrup. The syrup is processed and fermented into alcohol or vinegar.

Meat / Nut –

One of the best parts of the coconut tree and its uses is the meat. Meat or nuts are a good source of protein and act as a natural laxative. Meat has many different uses as animal feed, flowers, dried fruit, milk, chips, copra, candy, lettuce, salad and other sweet treats. The oil made from the meat is useful in skin, hair and face care. This is because of its powerful antimicrobial effects on the body, while milk is also useful as a natural sweetener and is mostly used as a basic ingredient in many dishes.

Water –

The water inside the young fruit is the purest and healthiest water. It ensures proper hydration of the body, natural cleansing of the kidneys and balances electrolytes in the body. These are the different parts of the coconut tree and their uses. It is really good to know that there are trees like the miracle tree that can be used to make various useful products. Thanks to the tree of life, it really gives us products that we can always use (Ahuja et al, 2014).

Constituents –

It has lauric acid, decanoic acid, cytokinin, caprylic acid, Cysteine Proline, and polyphenol oxidase.

Mode of Application-

After washing your hair with shampoo and conditioner, rub some coconut oil into your hair to protect it when you brush it. As a hair mask Rub coconut oil into your hair and leave it on for a few hours (or overnight) before washing it off.

Reason –

It stimulates hair growth. The vitamins and essential fatty acids naturally found in coconut oil nourish the scalp and help remove serum fluid from the hair follicles.

Uses-

Lauric acid-

Nourishes the hair and moistures the hair shaft.

Decanoic acid-

hair conditioning agent

Cytokinin-

To enhance root hair elongation

Caprylic acid- Retain moisture in curly hair (Slator et al., 2024).

(F).Rosmarinus officinalis (Labiatae) and Lavandula

Kingdom-

Division-

Tracheophyta

Class-

Magnoliopsida

Order-

LamialesBromhead

Family-

LamiaceaeMartinov

Genus-

LavandulaL.

Species-

LavandulaangustifoliaMil

Morphology -

Rosemary is a dense bush, branched, evergreen and blue–white flower, reaching a height of about 1 m It is characterized by leaves with 1–4 cm long and 2–4 mm wide, sessile, coriaceous, linear to linear-lanceolate, with recurved margins, upper side dark green and granular and tomentose below, with prominent mid-rib and very characteristic scent.Lavenders are small evergreen shrubs with grey-green hairy linear leaves. The purple flowers are sparsely arranged on spikes at the tips of long bare stems and produce tiny nut-like fruits. The plant's fragrance is due to glowing oil glands embedded among the tiny star-shaped trichomes (plant hairs) that cover the flowers, leaves and stems. Plants in cultivation usually do not produce seeds and propagation is done by cuttings or division of the roots (Katarzyna et al ., 2023).

(A) Rosmarinusofficinalis (B) Thymus mastichina (C) Lavandulapedunculata (D) Salvia verbenaca (E) Pistacialentiscus (F) Cistusladanifer (G) Myrtuscommunis.

Leaves –

The genus includes annual or short-lived herbaceous perennial plants, and shrub-like perennials, subshrubs or small shrubs. Leaf shape is diverse across the genus. In some commonly cultivated species, they are simple; in other species they are pinnate, or pinnate, sometimes more pinnate and segmented. In most species, the leaves are covered with fine hairs or indumentum, which normally contain essential oils (Krajewska et al., 2022).

Flowers –

Blue, purple or lilac in wild species, sometimes blackish or yellowish. The hazel calyx is tubular. The crown is also tubular, usually with five lobes (the upper lip often has a cleft and the lower lip has two clefts). The flowers are contained in whorls, held on spikes rising above the leaves, the spikes being branched in some species. Some species produce colorful bracts at the tips of the inflorescence.

Constituent-

Angustifolia Miller (Labiatae) Rosmary constitutes 1-2% volatile oil containing 0.8-6% of esters and 8-20% of alcohols, The principal constituents are 1,8-cineole, borneol, camphor, bornyl acetate and monoterpene hydrocarbons. The chief constituents of lavender oil are Lavenanlol, linalyl acetate, linalol, lavendulyl acetate, terpineol and cineol (Habán et al ., 2023).

Mode of Application-

These oils were massaged into the scalp for a minimum of 2 minutes a day for seven months.

Reason –

Essential oils enter your system through your olfactory system (inhalation) and/or your skin and enter your circulatory system (blood) where they bind to receptors and change their chemical composition. Topical herbal therapy stimulates hair follicles and has proven to be the safest way to deal with various types of hair loss (alopecia), however the perfect pharmacological effects of these herbs and oils are still unknown.

Uses -

- Stimulating hair growth when applied to the scalp
- Reducing inflammation
- Promoting shine
- Killing lice
- Improving hair texture (Wilson et al., 2019).

(G). Glycyrrhizaglabra Linn. (Leguminosae)

Kingdom-

Division –

Angiospermae

Class –
Dicotyledoneae
Order –
Rosales
Family –
Leguminosae
Genus –
Glycyrrhiza
Species –
Glabra
Morphology -
Glycyrrhizaglabra Linn is a hardly perennial shrub, attaining a height up to 2.5m. The leaves are compound, imparipinnate, alternate, having 4-7 pairs of oblong, elliptical orlanceolate leaflets. The flowers are narrow, typically papilionaceous, axillary spikes, lavender to violet in colour. The calyx is short, bell-shaped, with lanceolate tips and bearing glandular hairs.Thefruit is a compressed legume or pod, up to 1.5cm long, erect, glabrous, somewhat reticulately pitted, and usually contains 3-5 brown reniform seeds. The main root is approximately 1.5 cm long and divides into 3-5 secondary roots (Lohar et al., 2020).
Root-
Licorice (Glycyrrhiza glabra L.) is a plant with a long history of medicinal use, currently used in the tobacco industry and cosmetics (Wagner et al., 2016). Its contribution to gin is spice and sweetness. Glycyrrhizin, considered the signature component of character, has flavor characteristics of lingering sweet, with a brown, syrupy, woody aftertaste. However, it is a non-volatile compound and has not yet been identified in distilled gin. The root is considered hot, dry and supportive, demulcent and lenitive, relieving thirst and cough, and removing unhealthy humors from the body. It is also emmenagogue and diuretic, useful in asthma and bronchial irritations. Avicenna recommended the decoction for chronic fevers, tracheal pains, colds and for the clarity of the voice; also dripped into the eyes to strengthen.
Constituents –
The chief constituents are glycyrrhizin, potassium and calcium salt of glycyrrhizinic acid.
Mode of Application
-Licorice paste, made by grinding the pieces in milk with a pinch of saffron, is another valuable remedy for patchy baldness. This paste should be applied to the bald areas in the evening before going to bed.
Reason –
The extract of liquorice has proved to possess.
Uses –
Glycyrrhiza is used as a wash for greying of hair, decoction of Glycyrrhiza is used for erysipelas (Nerya et al., 2003).
(H).Hibiscus (Malvaceae)
Kingdom-
Division –
Magnoliophyta
Class –
Magnoliopsida-Dicotyledons
Order –
Malvales
Family –
Malvaceae-Mallow family
Genus –
Hibiscus L.-Rosemallow
Species - Hibiscus rosasinensis L.-Shoeblackplant
Morphology -
Hibiscus rosasinensis commonly known as red Hibiscus. It is large shrub and has variable structure. The tree grows to a height of 4.7 meters. All verity of Hibiscus flowers has the stalks of the stamens (the pollen producing part) and the style is fused into along column that is exerted from the centre of the widely spreading petals. The red variety of hibiscus flowers is very large and can be up to 15 cm long. The petals may be smooth or scalloped, single or double depends on the cultivated varieties. The anther which is pollen producing part can be seen part way up the column and five round stigma lobes (on to which

pollanlands in order for fertilization occurs) are visible at the tip of the column. Hibiscus leaves are ovate in shape (wider at the base than at the tip) and grow to lengths of 5 to 15 lobes arranged alternately on the branches. The leaves can be variegated or dark green and the edges are jagged with lighter spots. The fruit of the red Hibiscus is dry, five parted capsule that contains up to three seeds, each of which is kidney shaped and 2.5 cm long. (Kaur et al ., 2023).

Seed –

Growing hibiscus from seeds is more difficult than propagating from cuttings. They often take a long time to germinate and need a fair bit of attention. Nicking the hard seed coating slightly and soaking the seeds for up to eight hours it can speed up the germination process because it allows more moisture to penetrate the seed. For best results, place the seeds in a warm, sunny location (at least 75 degrees Fahrenheit) and sow the seeds about a quarter inch deep. After a few weeks, seedlings should appear. With their fragile stems, they will need careful repotting and gradual hardening off.

Here are the 9 parts of a hibiscus flower:

- Corolla
- Calyx
- Female Organs (Pistil)
- Stigma
- Style
- Ovary
- Male Organs (Stamen)
- Anthers
- Filaments

Corolla

The corolla consists of all the petals in the flower. The petals are usually colored and envelop the reproductive organs. This is why the crown is often described as the second whorl. Petals in the corolla can be either free (polypetalous corolla) or fused (gamopetalous corolla). In hibiscus, the crown is gamopetalous. The hibiscus crown is its most characteristic feature. As the hibiscus begins to bloom, the petals begin to grow. Petals consist of two components; limb and claw. The limb is the upper part of the petal. It is larger than the claw, which is the basic part of the petal. The claw is slender, almost stalk-like. There are five colorful petals on the hibiscus. Depending on the species, the petals can be red, blue, purple or pink. This is due to water-soluble pigments such as carotenoids, anthoxanthin and anthocyanin. Vibrant colors are essential for flower reproduction, better known as pollination. There are also nectaries on the petals. These sugar-rich tissues are responsible for drawing pollinators. Last but not least, the petals are a key element in protecting the floral parts of the hibiscus.

Calyx

The calyx contains a green structure that appears below the corolla. These green structures resemble petals and are called sepals. Similar to the petals, the corolla is surrounded by five sepals. The petals are considered the outermost whorl of the hibiscus. They are not colored like petals. Instead, their color is green like the stem and leaves. If you look at the sepal under a microscope, you will notice that it is much thicker than the leaves. It also shows veins and includes stomata.The petals are intact and present before bud formation. This is to ensure that the petals remain protected until maturity. The petals also protect the petals after the buds have bloomed. As the flower blooms, the calyx begins to expand from the base of the flower. The petals remain intact even after the petals have fallen.

Female Organs (Pistil)

Hibiscus female reproductive organs have many names. They are called pistil, carpel or gynoecium. This structure consists of stigma, ovary and style. The base of the pistil is supported by a thalamus or pedicle. The pistil itself is located in the center of the flow

Stigma

The stigma is the highest structure of the pistil. This is why it is commonly called "pistil head". It is a sticky platform that is always exposed to the surroundings. It carries pollen to the ovary through a long tube called the style. The stigma is the structure responsible for collecting pollen. The sticky platform is responsible for trapping pollen grains and facilitating entry into the ovary.There is also a part of the stigma called the transfer tissue. The transfer tissue is an extracellular matrix made up of polysaccharides. It helps in the development of the pollen tube. When pollen grains germinate, they form pollen tubes and begin to move toward the ovary.

Style

It is a fibrous and slender structure that serves as a gateway from the stigma to the ovary. This tubular structure brings pollen to the ovary by acting as a transfer passage. At the end of the style, the ovary is attached to the thalamus and is ready to begin the fertilization process.

Ovary

Many flowers have several ovaries. However, this is not the case with hibiscus. There is only one ovary in the hibiscus; it is called the upper ovary because it is not above the petals and not below them. The ovary is where fertilization occurs. Pollen meets ovules (eggs) to form a seed. The ovary, on the other hand, develops into a fetus after double fertilization. The wall of the ovary passes into the pericarp, which is referred to as the fetal tissue.

Male Organs (Stamen)

The male reproductive organs in hibiscus are collectively called stamens. The stamen is responsible for the production of pollen. Most flowers have a few stamens, but the hibiscus contains hundreds of stamens. A stamen contains two structures: anthers and filaments.

Anthers

The anther is a button-like structure that contains pollen grains (male gametes). Inside the anther are microstructures, called micro sporangia, that carry the pollen grains. At the base of the stamens are nectaries that offer food for pollinators. \Under the microscope you could see that the hibiscus anther consists of four chambers and two lobes. The lobes are separated by a connective tissue called parenchymatous. The chambers are separated by grooves called strontium. Finally, there are three layers of cells in each anther lobe.

- Internal tapetum. These are pyramid-shaped cells that surround the microsporangium. They help provide nutrients to the sporogenous cells.
- The middle layer. It consists of one to three layers of parenchymatous cells
- Outer endothecium. They are flattened cells that originate from the mitosis of a parietal cell. In short, the role of the anther is simple: to develop the flower through fertilization. Filaments- Filaments are long stems that have an anther at the top. In hibiscus, the filaments originate from the stalk of the thalamus and surround the style, while the stigma is located above the anthers.

Several anthers protrude from each filament. In a single hibiscus flower, there are hundreds of filaments supporting several hundred anthers.

The function of the filaments is simple: hold the anther high enough for pollinators to reach it easily. This also facilitates the dispersal of pollen by wind.

Leaves –

The leaves are the "solar panels" of the hibiscus. They capture sunlight and create energy for the plant through photosynthesis. These flat green structures produce sugars and nutrients that support plant growth and development. Leaves also play a vital role in releasing excess water vapor through tiny pores called stomata, a process known as transpiration. It helps regulate the plant's temperature and maintain a healthy water balance. In addition to their functional importance, hibiscus

leaves contribute to the aesthetic appeal of the plant. It enhances her overall beauty and provides a fresh background for vibrant flowers.

Roots –

Roots are the hidden heroes beneath the soil, securely anchoring the hibiscus plant and absorbing essential water and nutrients from the ground. This underground system ensures the plant's survival by providing the necessary resources for flower growth, development and yield. That's why I have to mention this part in the anatomy of hibiscus flowers. Roots also stabilize the soil and prevent erosion, supporting the overall health of the ecosystem. As the base of the hibiscus plant, the roots are instrumental in supporting its above-ground growth and ensuring its ability to thrive in a variety of environments. But when caring for it, you won't want to apply fertilizer directly to the exposed roots Fertilizers for hibiscus flowers should be spread evenly over the surface of the soil around the plant, which includes the root zone (Mark et al., 2023).

Constituents –

Flavonoids: Anthocyanin's and Cyaniding-3, 5-diglucoside, Cyaniding-3-sophoroside-5-glucoside, Quercetin-3,7-diglucoside, Quercetin-3-diglucoside .

Mode of Application –

Massage the oil into your scalp with your fingertips. Work it down to the tips of your hair. Once all of your hair is covered, massage your scalp for an additional 10 minutes. Leave the oil in your hair for 30 minutes.3 times a week.

Reason –

Works as a scalp moisturizer, improves hair growth, cures dandruff and itchiness, prevents premature graying

Uses -

- Helps with keratin production
- Prevents premature graying
- It acts as an antioxidant and also helps in the reduction of cholesterol situations.(Vora et al., 2022).

(I). Tulsi(Ocimum sanctum L)

Kingdom-

Division –

Angiospermae

Class –

Tracheophytes

Order –

Lamiales

Family –

Lamiaceae

Genus –

Ocimum

Speces –

O. tenuiflorum

Morphology -

It contains dried fresh leaves of O. sanctum Sinn and Ocimum basilicum belonging to the family Lamiaceae. It is an herbaceous, much planted annual plant found throughout India. It is considered sacred by Hindus Tulsi improves blood regulation and keeps your scalp cool and reduces itching and thus promotes hair growth. Tulsi is anserect sweet scented shrub which grows up to a height of 3-5 feet. It is commonly grown in gardens and in the periphery of temples. It has got a pungent taste and fragrant smell. It is the only plant that can absorb carbon di-oxide through-out its life. It releases the oxygen in the early morning which is beneficial for the people in breathing disorders. The Tulsi plant is of great importance to mankind due to the many medicinal effects it provides. Tulsi leaves are widely used in the preparation of Ayurvedicmedicines (Bhowmik et al., 2010).

Leaves –

The leaves are quit effective for the ulcer and infections in the mouthChewing on a few leaves can alleviate these symptoms. The herb is both therapeutic and preventative for bug bites and

stings. After a few hours, another teaspoonful of the leaf juice is consumed. Applying fresh juice to the afflicted areas is also necessary. When insects or leeches bite, a paste made of fresh roots works well as well.Chewingtulsi leaves helps with the flu and colds . Water boiled with basil leaves can be taken as drink in case of sore throat. Basil has strengthening effect on the kidney. In case of renal stone the juice of basil leaves and honey, if taken (Thakur et al., 2023) regularly for 6 months it will expel them via the urinary tract. The juice of basil leaves is beneficial for common pediatric issues such as fever, diarrhea, vomiting, and coughing.. If pustules of chicken pox delay their appearance, basil leaves taken with saffron will hasten them.

Constituents -Essential Oil, Fixed Oil, Alcoholic contain, vitamins and Minerals contains.Leaves is mixed with ginger powder and black pepper in equal quantity and filtered; the filtrate

Mode of Application –

In a grinder, combine fresh tulsi leaves and water. After making a paste, remove it. Pour the tulsi paste into a dish along with the necessary amount of your normal hair oil. Combine, then lightly massage with your fingertips over the entire scalp and hair.(Maithi et al., 2020)

Reason –

That promote hair development and aid in the treatment of scalp ailments. It also helps prevent premature graying of hair and helps treat fungal infections and dandruff. to learn more about tulsi uses and advantages for hair care. (Sethi et al., 2020).

Uses -

- Nourishingthe hair and skin with vitamins A, C, K and E.
- Providing minerals such as iron, calcium and magnesium that help your skin and hair.
- Treating acne.
- Preventing premature ageing of hair.
- Reducing pigmentation (Developer et al., 2019).

CONCLUSION

Hair loss can be caused by several factors, including major stressors, some medications, illnesses such as thyroid disorders, a sex hormone imbalance, or a dietary deficiency of protein, iron, zinc, or biotin, for example autoimmunity, which can cause hair to fall out in one or more small patches on the scalp, eyebrows, or eyelashes. Hence, herbal drugs having potency for curing alopecia with no side effects. The various types of allopathic drugs to treat hair loss but they have many side effects. Herbs are starting material for any medicine research. Approximately about 80% residents recommended herbal drugs for their beneficial effects along with fewer side effects as compared synthetic drugs.

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CONFLICT OF INTEREST

The authors declare that they have no conflict of interests.

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