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Herbal Hair Oil: A Review

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Abstract:

The article discusses various synthetic and herbal ingredients that can be used to address hair-related issues. It also highlights some of the drawbacks of synthetic agents. These plants can be used in their natural form or after being purified or derivatized to make them more suitable for use in cosmetics. The article also covers the anatomy of hair, its growth cycle, and the disorders related to hair, along with recommended treatments.

Keywords: Hair care, Herbal Hair oil, Hail oil, Synthetic, Herbal

1. Introduction

Hair care products may be defined as the preparations which are used for cleansing hair and scalp, alter the texture and giving a healthy appearance to the hair. There are various types of hair: normal hair, oily hair, and dry hair, which varies from one human to another human. [1] Natural products in the form of herbal formulations are available in the market and are used as hair tonics, hair growth promotors, hair conditioner, hair cleansing agents, antidandruff agents, as well as for the treatment of alopecia, dandruff and lice infection.[2] A number of herbs products have been acclaimed with hair growth-promoting activity. [3]

Based on a market survey conducted on crude drugs currently used in herbal hair care products, we can identify which drugs are suitable for hair care. The objective of this study was to evaluate the hair growth activity of herbal formulations that combine oil extracts of all the mentioned drugs in a range of concentrations. Nowadays, in order to fulfill traditional promises, multi-ingredient hair care products are created and tested for their ability to promote hair growth [4]

Hair care products such as hair oils, shampoos and serums are the preparations used for the prevention and treatment of dandruff, baldness and other ailments, aggression of hair. Additionally, they encourage the luxurious growth of hairs. Two major categories of hair care products exist;

1. Hair tonics

2. Hair grooming aids

In essence, there are herbal plant extracts with an oil base. A plethora of herbs have been used as hair remedies. A few herbs are amla, henna, neem, methi, lemon, tulsi, brahmi, hibiscus and others are some herbs. [5-6]

There is a commonly held belief that chemical-based cosmetics can be harmful to the skin. As a result, consumers have become more aware of the potential risks associated with such products and have started to demand more natural alternatives. This has led to the increasing use of natural extracts in cosmetic preparations. When it comes to hair care, shampoos and oils are the preferred formulations due to their cleansing and moisturizing effects. They have also been shown to be effective against the fungus Malassezia and do not include any synthetic medications. In addition, herbal actives have been found to promote hair growth, enhance hair smoothness, and reduce hair loss.[8]

1.1. Hair formulation based on synthetic ingredients:

Many people have reported experiencing scalp irritation, hair loss, and significant hair damage from using certain hair care brands. This is because many commercially available hair care products are packed with chemicals that can be harmful to both the skin and overall health. Unfortunately, most people are not aware of the negative impact associated with these harmful synthetic ingredients. Most shampoos made with synthetic components contain a substance called a surfactant, which is known for its ability to reduce surface tension of water. Despite having less than optimal conditioning or irritating potential, several hair care products contain surfactants with powerful lathering properties, even though they may not be ideal in terms of conditioning or irritant potential.

One commonly used synthetic ingredient in shampoo is sodium lauryl sulphate (SLS). However, SLS is a rather harsh detergent and may cause irritation to the scalp. [9]

1.2. Hair formulation based on herbal ingredients:

Herbal medicines or their formulations are a natural alternative to synthetic pharmaceuticals. Over the past few decades, the usage of natural ingredients in cosmetics has dramatically increased. Natural botanicals can be used in their raw form or they can be extracted, purified, or derivatized to make them more suitable for use in cosmetics. Active ingredients such as vitamins, essential oils, amino acids, fruit acids, and glycosides are extracted from different plants and are believed to be useful in cosmetics formulations. Due to their perceived safety and lack of negative effects, herbal cosmetics are becoming increasingly popular and in demand. Nowadays, there are several herbal-based hair care formulas available in the market that include herbal ingredients such as plant extracts and essential oils. There are numerous plants that are often used in these formulas. Cosmetics based on natural ingredients are typically associated with a healthy lifestyle, and their use is growing in popularity. [10]

2. Ingredients used in herbal hair care formulation:

1. Synthetic ingredients
2. Herbal ingredients

2.1. Synthetic Ingredients:

Currently, various chemical agents are used to treat dandruff and other hair-related problems by reducing the amount of fungi on the scalp. The primary active agents used for treating dandruff and other hair-related conditions include imidazole derivatives such as ketoconazole and various compounds such as selenium sulfide, zinc pyrithione, ethylene glycol, piroctone olamine, salicylic acid, guar hydroxypropyltrimonium chloride, dimethiconol, glycolic acid, hyaluronic acid, steroids, and tar derivatives. Most products designed to fight dandruff contain zinc pyrithione, which has antifungal effects. A hair care formulation that contains fluocinolone acetonide (0.01%) is approved for treatment. A study showed that clobetasol propionate shampoo improved the results.. [11]

Side effects of synthetic ingredients are Itching, mild irritation, oiliness and dryness of hair and scalp are all possible side effects of using synthetic hair products. Severe allergic symptoms include rash, itching, tightness in chest, abnormal hair loss, difficulty in breathing etc [12]

2.1.1. Different synthetic agents used:

1. Salicylic acid

Salicylic acid is a type of beta hydroxy acid keratolytic agent that is particularly useful for removing scaly, hyperkeratotic skin. It works by decreasing the adhesion between corneocytes, which are the cells that make up the outermost layer of the skin. While the exact mechanism of action of this organic acid is not yet fully understood, it is thought to involve the release of desmogleins and the disintegration of desmosomes.

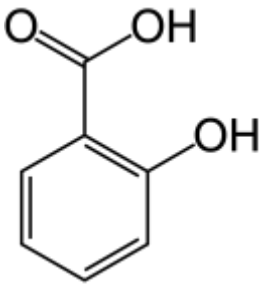

Fig -1. Structure of Salicylic acid

2. Sulphur

Sulfur is a non-metallic element that has a yellow color and possesses both keratolytic and anti-microbial properties. The keratolytic effect is believed to occur due to the reaction between sulfur and cysteine in keratinocytes, while the anti-microbial effect may depend on the conversion of sulfur to Pentathionic acid by normal skin flora or keratinocytes.

Fig-2. Sulphur

3. Zinc

It is believed that zinc pyrithione normalizes epithelial keratinization and sebum production, leading to scalp healing. Studies have demonstrated a significant reduction in the number of yeast organisms after the application of zinc pyrithione

Fig-3. Zinc

4. Coal Tar

Coal tar has been traditionally used to treat psoriasis and has also been proven effective in treating dandruff. However, it is considered a second-line therapy due to its limitations such as staining, odor, and messiness in application. Tar products help disperse scales, which may reduce Malassezia colonization

Fig-4. Coal tar

5. Steroids

Topical corticosteroids' pharmacokinetic properties depend on the structure of the applied agent, its vehicle, and the skin upon which it is administered. These agents' anti-inflammatory and anti-proliferative effects make them effective in treating various skin conditions. Often, they are used in conjunction with other treatments, such as antifungal agents

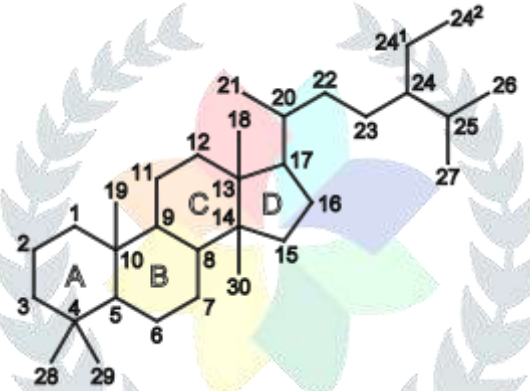

Fig-5 structure of Steroid

6. Selenium sulphide

The effectiveness of topical corticosteroids depends on the structure of the agent, its application method, and the skin type it is applied on. These agents are known for their anti-inflammatory and anti-proliferative properties that make them useful in treating various skin conditions. They are usually used in combination with other treatments.

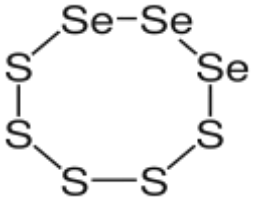

Fig-6. Structure of Selenium sulphide

7. Ketoconazole

Ketoconazole is an antimycotic agent that is effective against Candida albicans and M. furfur. It works by blocking the biosynthesis of ergosterol, which is a primary sterol derivative of the fungal cell membrane. Among all the imidazole currently available, ketoconazole is a leading contender as a treatment option for seborrheic dermatitis due to its effectiveness. A ketoconazole 1% shampoo is approved for over-the-counter use, while a 2% shampoo is available by prescription (Nizoral). However, it may cause irritation and stinging.

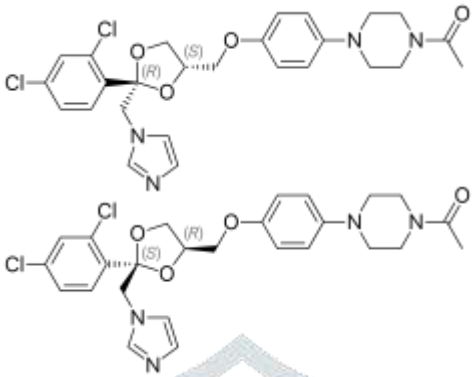

Fig-7. Structure of (2R, 4S)- (+)-ketoconazole = top

(2S, 4R)-(-)-ketoconazole = bottom

8. Hydroxypyridones

Hydroxypyridones do not affect the biosynthesis of sterols. Rather, they disrupt the active transport of essential macromolecule precursors, cell membrane integrity, and the cell respiration process of dermatophytes, yeast, and fungi. In addition, these agents have shown anti-inflammatory effects in human polymorphonuclear cells. They also inhibit the synthesis of prostaglandins and leukotrienes. [13]

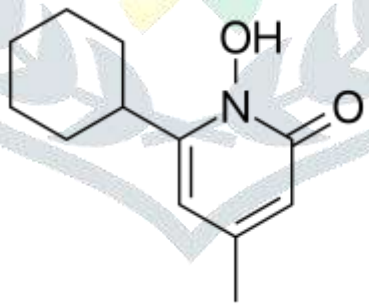

Fig-8. Ciclopirox: a member of hydroxypiridone family

9. Climbazole

It is one of the newer anti-fungal drugs used usually in combination or as a monotherapy. [14]

Climbazole is a common ingredient in anti-fungal shampoos, typically used at concentrations of 0.25-2%. However, it can cause localized skin irritation, such as redness, itching, and rashes, as well as allergic reactions. Additionally, it's important to note that climbazole is also ecotoxic. [15]

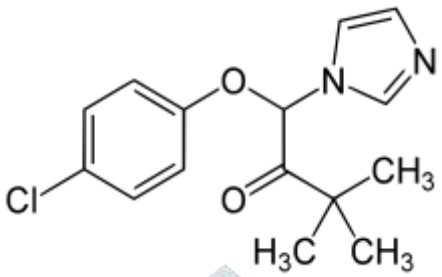

Fig-9. Structure of Climbazole

10. Clotrimazole

A typical formulation uses a concentration of 1%. It works similarly to other azoles by stopping the production of ergosterol, which impairs the function of the membrane and increases permeability. Overdosing can cause symptoms such as skin irritation, redness, blistering, hives, peeling, swelling, itching, burning, and muscle cramps..[16]

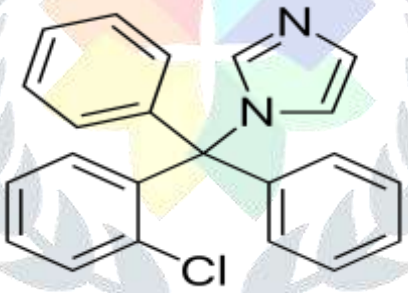

Fig-10. Structure of Clotrimazole

11. Piroctone Olamine

Typically, shampoos use a concentration of 0.5% to 1% piroctone Olamine for its anti-fungal properties. However, it can cause skin irritation, swelling, pain, numbness, bleeding, bruising, and wrinkles. Piroctone Olamine works by inhibiting the breakdown of sebum triglycerides into oleic acid and arachidonic acid. Arachidonic acid is the primary mechanism by which fungi cause dandruff. Therefore, inhibiting this mechanism can help treat dandruff. Piroctone Olamine also inhibits energy metabolism in the mitochondria of fungal cells. It penetrates the cell wall and chelates with polyvalent metal ions like iron and aluminum ions. [18]

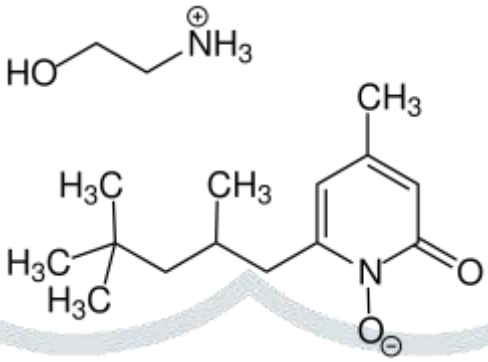

Fig-11. Structure of Piroctone olamine

2.2. Herbal ingredients:

For centuries, people have been using herbs and herbal extracts to cleanse, beautify, and maintain their hair. The popularity of herbal products is understandable because they are inexpensive and have negligible adverse effects. Herbs are commonly used as therapeutic agents because they are widely accessible, inexpensive, and generally considered safe. People have faith in such remedies. [21]

The study found that tea tree oil had significant anti-fungal properties among the herbal ingredients. Basil oil and coleus oil were noted to have the highest anti-microbial activity among all the herbs used. Other herbs included harshingar, hibiscus, neem, amar bel, haldi, amla, onion extract, and various essential oils. [22] The potentials of four extracts viz. Hibiscus, amla, garlic, haritaki were established as active dandruff plants.[23]

2.2.1. Different herbal ingredients used:

1. Hibiscus (Hibiscus rosa-sinensis Linn) (Malvaceae)

Fig-12

Parts used: leaves and flowers

Chemical constituents: Flavonoids; Anthocyanins and cyaniding-3,5-diglucoside, cyaniding-3-sophoroside-5-glucoside, quercetin-3,7-diglucoside, quercetin-3-diglucoside. [24]

Hibiscus rosa-sinensis is a hairless shrub that is widely grown in tropical regions. It is known for its hair growth promoting and anti-greying properties, particularly in its leaves and flowers. In India, various parts of Hibiscus rosa-sinensis are used in herbal hair growth products. Adhirajan et al. conducted research which indicated that the leaf extract of Hibiscus rosa-sinensis could help maintain hair growth both in vivo and in vitro. [27]

2.Giant dodder (Cuscuta reflexa Roxb) (Convolvulaceae)

Fig-13

Part used: stem

Chemical constituent: Cuscutin, cuscutalin, beta-sitosterol, Luteolin, Bergenin and kaempferol. [28]

Amarbel, also known as cuscuta reflexa Roxb., is a leafless, twinning, and parasitic dodder with long and slender yellow stems. It is commonly found in tropical and temperate regions, including throughout India. Dixit et al. reported that the stem of amarbel can promote hair growth by transforming hair follicles from the telogen to anagen phase. [29]

3. Chinese wild ginger (Asiasari radix) (Aristolochiaceae)

Fig-14

Parts used: Roots and rhizomes

Chemical constituents: Safrole (18.4%), methyl eugenol (18%), 3-methoxytoluenes and 3-benzodioxole derivatives. [30]

Asiasari radix is the root and/or rhizome of Asiasarum heterotropoides, which belongs to the Aristolochiaceae family. According to Rho et al., Asiasari radix extract has the potential to promote hair growth. This effect may be attributed to its regulatory effects on gene expression of cell factors [31]

4. Basil (Ocimum gratissimum Linn) (Lamiaceae)

Fig-15

Part used: Leaves

Chemical constituents: Essential oils: Eugenol. Carvacrol, Nerol and Eugenol methyl ether. [32]

There is an herb that can be found throughout India. Orafidiya and colleagues conducted a study to assess the effectiveness of the leaf essential oil of Ocimum gratissimum Linn. (also known as Ocimum oil) in promoting hair growth in individuals experiencing cyclophosphamide-induced hair loss. The study concluded that ocimum oil has the potential to enhance normal hair growth and promote follicular proliferation in individuals experiencing hair loss due to cyclophosphamide [33]

5. Ginseng (Ginseng radix) (Araliaceae)

Fig-16

Parts used: Roots and stems

Chemical constituents: Ginsenosides, Essential oils: Sesquiterpenes, Polyacetylenes, Polysaccharides, Peptidoglycans, Steroid, Choline, vitamin- B, C, E, Fattyacid, carbohydrates, amino acids. [34]

Ginseng radix is a valuable medicinal herb that has been used since ancient times to enhance the body's constitution, increase appetite, boost vitality, and reduce sensitivity to cold. According to Matsuda et al., Ginseng radix can promote hair growth, and the active component G-Rb1 is one of the factors responsible for this effect in the mouse vibrissal hair follicle organ culture model. [35]

6. Aloe vera (Aloe vera L.) (Liliaceae)

Fig-17

Part used: Leaves

Chemical constituents: Barbaloin (15-40%), Hydroxy loin (3%), mucilage (glucose, mannose, galacturonic acid), Aloe-emodin, Aloesone, Alocutin A and B. [36]

Aloe vera L. or A. barbadensis gel has been traditionally used to combat hair loss and improve hair growth after alopecia. According to Inaoka et al., aloenin is the primary component responsible for stimulating hair growth without causing skin irritation. [37]

7. Rosemary (Rosmarinus officinalis Linn) (Labiatae)

Fig-18

Parts used: Leaves and flowers

Chemical constituents: Volatile oil (1-2%): Bornyl acetate, Borneol, cineole, camphene, alpha-pinene, rosemarinic acid, alpha and beta amyrins, betulins and beta- sitosterol. [38]

Traditionally surrounded by legends and folklore, this aromatic herb possesses culinary, medicinal, and cosmetic properties. Its use in folk medicine includes stimulating hair growth as a rinse. Additionally, rosemarinic acid provides antioxidant benefits. [39]

8. Henna (Lawsonia alba L.) (Lythraceae)

Fig-19

Parts used: leaves and seeds

Chemical constituents: Coumarins, naphaquinones (Lawsone), flavonoids, sterols, tannins, xanthones, laxanthones and beta-ionone of the essential oil. [40]

Henna has been known to promote hair growth and was even used in ancient Egyptian remedies for hair loss. It seems that the use of henna rarely leads to contact dermatitis, and henna leaves contain compounds that have anti-inflammatory and antiallergic effects. [41]

9. Maidenhair tree (Ginkgo biloba) (Ginkgoaceae)

Fig-20

Part used: Leaves

Chemical constituents: Lactones (6%): Diterpenoids, ginkgolides A, B, C, bilobalide-A, flavanols (24%): Kaempferol, Quercetin, Isorhamnetin. [42]

Kobayashi et al. found that Ginkgo biloba leaf extract promoted hair regrowth by affecting cell proliferation and apoptosis in hair follicles, suggesting potential use as a hair tonic. [43]

10. Shrubby sophora (Sophora flavescens) (Leguminous plants)

Fig-21

Part used: Roots

Chemical constituents: Alkaloids: Oxymatrine, matrine, losmatrine, sophoranol, sophocarpine, Bioflavones: Norkurarinone, kuraridinol, sophoraflavanone, formoronetin and fatty acids. [44]

According to Roh et al., the extract obtained from the dried roots of Sophora flavescens has an excellent ability to promote hair growth. This extract has been shown to increase mRNA levels of growth factors like IGF-1 and KGF in dermal papilla cells, which suggests that the extract may work by regulating growth factors in these cells. Additionally, the extract was found to have a strong inhibitory effect on the activity of type II 5α-reductase.[45]

11. Wild gourd (Citrullus colocynthis Schard) (Cucurbitaceae)

Fig-22

Part used: Fruits

Chemical constituents: Resinous glycosides (Colocynthin and colocynthitin), phytosterol glycoside, citrullol, pectin, albuminoids, cucurbitacins-cucurbitacin E and I. [46]

In a study by Dixit et al., it was found that Citrullus colocynthis can promote hair growth by increasing the number of hair follicles in the anagenic phase, while also reducing the initiation and completion time of hair growth. Hair loss is often caused by 5-alpha reductase, which makes it important to conduct further studies on the mechanism of action of herbal extracts in this regard. [47]

12. Indian Gooseberry (Emblica officinalis) (Euphorbiaceae)

Fig-23

Part used: Fruits

Chemical constituents: Alkaloids (phyllantidine, phyllantine), vitamin C, gallotannis (5%), carbohydrates (14%), pectin, minerals, phenolic acid, gallic acid, ellagic acid, phyllemblic acid, emblicol, amino acid (alanine, aspartic acid, glutamic acid, lysine, proline).[48]

Gupta et al. investigated increase in hair growth activity of Emblica officinalis, bacopa monnieri (Scrophulariaceae), trigonella foenumgraecum (Leguminosae), murraya koenigii (Rutaceae). [49]

3. Hair structure:

Hair is a modified epithelial structure that forms as a result of keratinization of germinative cells. The outgrowth of these hair-producing follicles, which are located on the dermis, the second layer of the skin, reaches all the way to the epidermis, the outermost layer of the skin. Hair is composed of keratin, which contains elements such as carbon (C), hydrogen (H), nitrogen (N), sulfur (S), and oxygen (O). Although the rate of hair growth varies from person to person, on average hair grows about 5 to 10 mm per month. Hair growth is at its peak during the ages of 15 to 30. It has been observed that hair growth is greater in summers than in winters. There are approximately 10,00,000 to 20,00,000 hair follicles on the scalp alone. Hair follicles are also present all over the body except for the palms, soles, and lips. Hair on the head is an important part of a person's appearance and beauty, but hair growth in unusual places can have a negative effect. From an evolutionary perspective, human hair is similar to our mammal relatives' fur in appearance, as both emerged to provide warmth. The scalp, or the skin of the head, has seven components, including the papilla of hairs, hair shaft, mouth of the follicle, stratum granulosum, sebaceous gland, and oil duct. [51-52]

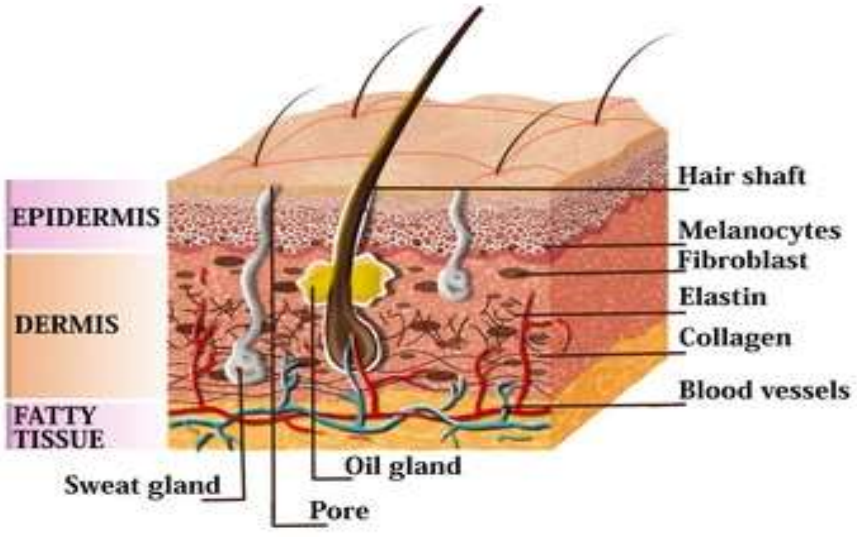

Fig-24. Hair structure

3.1. Types of hairs:

Morphologically there are three types of hairs: [53]

i. Intermediate hair: Intermediate hairs on the scalp display morphology between that of terminal and vellus hair, are medullated and contain a moderate amount of pigment.

ii. Terminal hair: Men have more terminal hairs on their chest, trunk, shoulders, legs, and arms than women do. Only 4500 of women's hair in these regions are terminal.

iii. Vellus hair: These are short, fine, soft usually non-pigmented, and un-medullated.

3.2 Hair growth cycle and its mechanism:

Throughout the hair growth cycle, the anagen phase is followed by the catagen and telogen phases. During the anagen phase, the hair is actively growing, while the catagen phase is characterized by the degeneration and resorption of the lower portion of the hair follicle. The telogen phase, also known as the resting phase, is when the hair is dormant and inactive, followed by a restart of hair follicle growth. {Fig- 25}

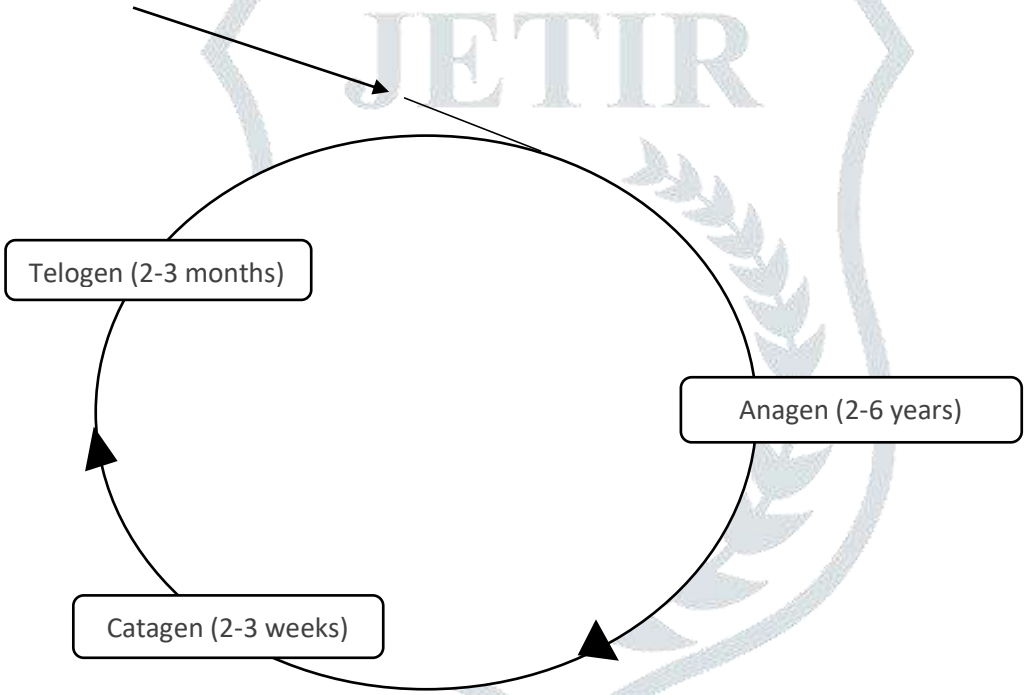

Fig-25. Hair growth cycle

Understanding the three key phases of hair development on the scalp is crucial. These phases are called Anagen, Catagen, and Telogen. The Anagen phase is the growth cycle that usually lasts between 2 to 6 years. A healthy scalp usually has around 10,000 hairs, with 90% of the follicles consistently growing in the Anagen phase of hair growth. The Catagen stage follows the end of the growth period when a follicle begins to become dormant. The Telogen stage is a dormant or resting phase that lasts 3-5 months. An old hair falls out when the dormant phase ends, and a hair follicle returns to the Anagen stage, where a new hair begins to grow. The rate of hair growth is typically about half an inch per month, depending on an individual's hair follicles and age. On average, a person loses 50-60 scalp hairs daily in a normal hair growth cycle, and new hairs begin to grow from these follicles. However, when less new hair enters the regrowth stage, hair loss starts to occur. It is essential to keep an eye on your hair growth cycle to maintain healthy hair [55]

3.3. Hair disorders:

The scalp is a unique part of the skin with distinguishing features that set it apart from other regions. It has a thick layer with high follicular density and numerous sebaceous glands that define its characteristics. The pH of the scalp is 5.5, while that of the hair shaft is 3.67. Due to the presence of these glands, along with the scalp's dark and warm environment, it becomes more vulnerable to fungal infections such as dandruff, seborrheic dermatitis, and parasitic infections like head lice. Although scalp disorders are not severe physical illnesses, they can cause significant social concerns. Scalp and hair conditions are of great psychological

concern in human societies. Even minor changes in hair, like greying, can negatively impact an individual's self-confidence and self-esteem. Scalp disorders include fungal and bacterial infections that cause problems like Tinea capitis or Pediculosis capitis. There are various types of scalp disorders that one can develo:[57]

i. Alopecia: which is commonly known as hair loss.

ii.Dandruff: It is the shedding of the dead skin cells.

iii. Ringworm, or Tinea capitis, is a fungal infection of the scalp caused by Trichophyton rubrumiv. Scalp psoriasis- It is characterised by raised reddish patched that may spread beyond the scalp to forehead or back of the neck or ears.

v. Folliculitis of the scalp is the inflammation of the hair follicles.

vi Head lice is a contagious infection caused by an obligate parasite called Pediculosis humanus capitis. The parasite resides on the human scalp and feeds on human blood..[58]

3.4. Treatment of hair disorders:

Dandruff and and other hair related problems:

Treatment of dandruff and of other hair related issues can be done by checking the presence of following ingredients in the product.[59] {Refer Fig-26, Fig-27}

3.4.1. Synthetic ingredients:

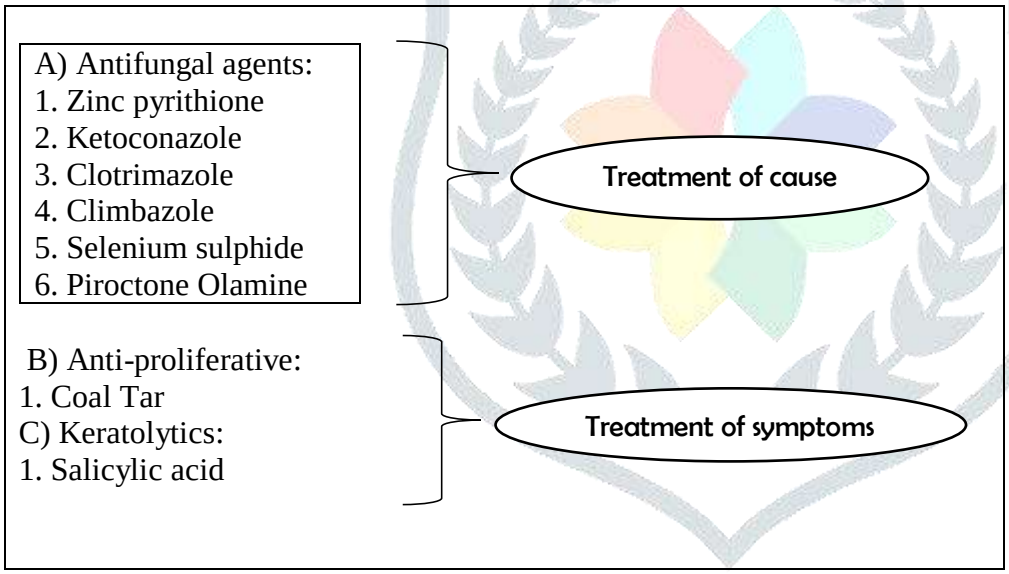

Fig-25. Classifies treatment strategies for dandruff

3.4.2. Herbal ingredients

S.no.	Ingrediant	Biologial name	Use of ingredient
1	Lemon	Dried fruits of citrus limon (Rutaceae)	Antidandruff, natural cleanser, pH modifier.
2	Methi powder	Dried seeds of Trigonella foenumgraecum (leguminosae)	Conditioning and nourishment of hair.
3	Hibiscus leaves	Dried leaves of Hibiscus roseus (Malvaceae)	Prevent hair loss and hair growth promoters.

4	Neem leaves	Dried leaves of Azadirachta indica (Meliaceae)	Fight scalp infection, prevent the dryness and flaking of hairs, lice, dandruff and itching.
5	Shikakai fruit	Dried pods of Acacia concinna (Mimosaceae)	Foam base and antidandruff, to improve hair and skin and it clears dandruff.
6	Aloe vera leaf	Dried leaves of Aloe barbadensis miller (Asphodelaceae)	Condition and moisturizing effect.
7	Henna leaves	Dried leaves of Lawsonia inermis (Lythraceae)	Growth of hair, connditioner.
8	Amla fruit	Dried ripes fruits of Emblica officinalis (Euphorbiaceae)	Darkening of hairs and hair growth promoter.
9	Reetha fruit	Dried fruits of Sapindus mukorossi (Sapindaceae)	Reetha is a foaming agent.
10	Tulsi	Dried leaves of Ocimum sanctum (Lamiaceae)	Antibacterial

Fig-27. Herbs used for hair related problems.

3.4.3. Treatment for Alopecia or hair loss Essential oils have gained popularity in cosmetic and therapeutic hair products due to their numerous benefits for the scalp and hair. These oils contain active ingredients that can quickly penetrate the scalp, nourish hair follicles, supplement nutrients, promote hair growth, moisturize hair roots, strengthen hair, and even remove unwanted metabolites that clog pores. Some essential oils can also bind to receptors in the hair follicle and encourage hair growth, making them a safe option for treating alopecia. However, it's important to note that drug interventions with essential oils have not been established in scientific literature. Rosemary (Rosemarinus officinalis) and chamomile (Matricaria chamomilla) are two essential oils that have been shown to condition hair and stimulate hair growth..[63]

3.4.4. Treatment of dandruff: Various plants such as Soyabean, Rosemary, Burdock, Ginger, and Great Plantain have been utilized to make antidandruff shampoos and oils. These natural agents are used to treat scalp disorders that cause excessive formation of dandruff cells from the horny layer of skin. They also help in reducing itching and scaliness that come with seborrheic dermatitis. The agents used to treat dandruff can be either natural or synthetic, and they work by freeing the scalp from natural grease, oil, dirt, or fatty lipids. By doing so, they prevent the development of a favorable environment for Malassezia, Candida, and bacteria to thrive. This limits the production of oleic acid and prevents the increased turnover of skin cells, thus effectively getting rid of dandruff. [65]

3.4.5. Treatment for Ring worm or Tinea capitis: In the United States, the preferred treatment for all types of scalp tinea is griseofulvin. Other options include itraconazole, fluconazole, or terbinafine. For tinea capitis, griseofulvin is usually prescribed for a minimum of eight weeks until the patient's culture results return negative and their hair is growing back normally. To prevent reinfection, the patient and their family members should use antifungal shampoo. It is also necessary to identify the source of the exposure.

3.4.6. Treatment for Scalp psoriasis: Based on the available literature, there are several types of herbal remedies and crude drugs that have the potential to help manage psoriasis. The list of such drugs includes Aloe vera, Alpinia galanga, Angelica sinensis, Annona squamosa, Azadirachta indica, and Calendula officinalis. [68-73]

3.4.7. Treatment for head lice: There are three effective treatment options for head lice: topical insecticides like Malathion, wet combing, and oral therapy. [74]

Conclusion: Human skin and hair may both tolerate herbs. Due to their compatibility with the human body, high cost-effective, and total safety compared to chemical-based goods, herbs are becoming more and more in demand. Additionally, it encourages the study of more recent plant components. The synthetic treatments that are currently accessible have several drawbacks, which may be brought on by insufficient efficacies or problems with compliance. In addition, these synthetic medications are unable to stop recurrence, which is a common issue linked with them. Herbal treatments and a balance diet are the best ways to treat issues liked to the hair.

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