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A brief review on “Herbal Hair Tonic”

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Abstract---These days, Human beings are interested by hair preparation and conditioner materials, including shampoos, hair tonic and conditioner formulations containing herbal extracts. Hair Tonic is a product which is used to fashion hair. The objective of this study involves the formulation of hair tonic with the aid of the use of jojoba, tulsi, coconut oil, henna and amla, hibiscus, rosemary oil, gotu kola, aloe vera, ziziphus jujube. and its evaluation for anti-fungal and antibacterial activity. The final formulation of these elements is formulated in batches with alternate ingredients in awareness. The system offers right effects for antifungal and antibacterial activity also the component having correct consistency, proper spreadability, homogeneity, look and pH.

Keywords---herbal formulations, anti-fungal activity, antibacterial activity, jojoba oil, Tulsi oil, coconut oil.

Introduction

Hair is one of the vital parts of the body derived from ectoderm of the skin, is protective appendages on the body and considered an accessory structure of the integument along with sebaceous glands, sweat glands and nail. They are also known as epidermal derivatives as they originate from the epidermis during embryological development^[1]. It is an important part of the human body. The problems associated with it include hair loss, unruly hair, lack of hair volume, conditioning, premature graying, dandruff, thinning of hair, dullness etc. Hair can vary in shape, length, diameter, texture, and color. The cross section of the hair could also be circular, triangular, irregular, or flattened, influencing the curl of the hair. All mammals have hair. Its main purpose is to regulate body temperature. It also wants to decrease friction, to guard against sunlight, and to act as a way organ. Hair is the crowning glory of a person that plays an important

role in the life of human being. For the scalp, hairs were known as protective covering in ancient times. From the color, type and amount of hair, one can be judged as from which society he/she belongs^[3]

The three types of hair

1. The lanugo (primitive hair or first hair): fine, short and colourless, this type of hair is specific to embryonic life and covers the whole body



Fig 1

2. Vellus hair is found on “hairless” areas. It is longer, slightly thicker and slightly pigmented. It represents less than 10% of all the hair of a young healthy adult.



Fig: 2

3. Terminal or mature hair is characteristic of “hairy” areas: it thus develops on the scalp and as the eyelashes and the eyebrows. It is thick, long and pigmented. Only the palms of the hands and the soles of the feet have no hair at all^[2].

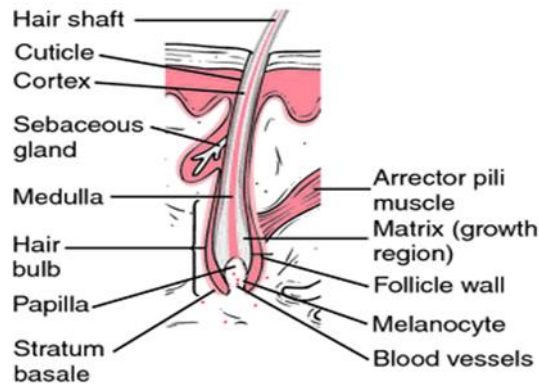


Fig: 3

Hair Growth

The hair coat, which maintains most nicely- developed creatures heat, dry and protected from unfavourable additives, calls for a constant stock of recent hairs at some point of the lifetime of the creature. To deliver new hairs, current follicles level in pattern improvement (anagen), relapse (catagen), and rest (telogen), all through every anagen degree, follicles produce an entire hair shaft from tip to root; at some point of catagen and telogen, follicles relaxation and installation their immature microorganism with the goal that they can get the signal to begin the subsequent improvement degree and make the new hair shaft. The hair cycle speaks to a noteworthy version for investigations of the rule of thumb of foundational microorganism peacefulness and enactment, simply as travel improving cellular expansion, cell destiny choice, separation and apoptosis in a regenerative grown-up epithelial tissue. Here we condense the full-size occasions of the hair cycle and phone on acknowledged controllers of the changes. Nitty-gritty audit of the hair cycle and its guidelines maybe determined some other place^[15].

Each hair grows in three cyclic phases:

1. Anagen (Growth phase): The anagen phase can be as short as 2 years to as long as 8 years. Approximately 80% of hair is usually in anagen phase.
2. Catagen (Involution) - In the catagen phase, the growth activity ceases and hair move to the next phase, catagen phase is between 10-14 days.
3. Telogen (Resting phase) - The Telogen phase is a state at which the hairs move into resting state. This phase lasts for 90-100 days^[1].

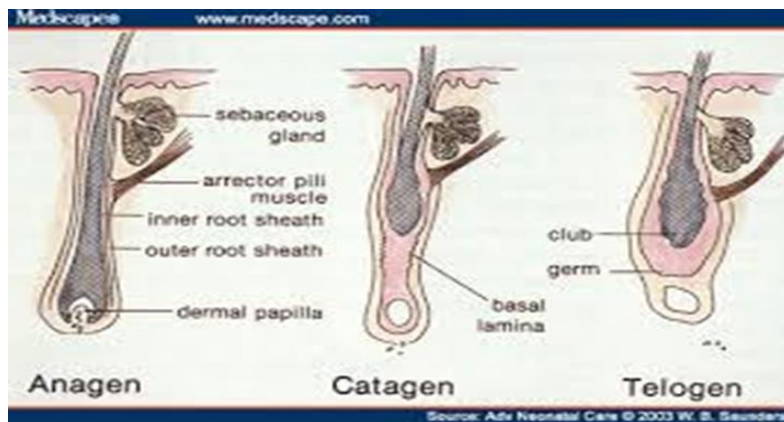


Fig: 4

Hair Follicle

The Follicle is a club shaped structure in the skin. At the top of the follicle may be a network of blood vessels that provide nutrients to feed the hair and help it grow. This is called the papilla. Each follicle arises from an interaction between epidermis and dermis. Follicle is divided into three segments:

1. Infundibulum
 2. Isthmus
 3. Inferior segment
1. Infundibulum: Extends from the surface opening of the follicle to the level of opening of its sebaceous gland.
 2. Isthmus: Extends from the infundibulum to the level of insertion of the arrector Pilli muscle.
 3. Inferior segment: The base of bulb is invaginated by a tuft of vascularized loose connective tissue called dermal papilla. The papilla of the hair contains many blood vessels and provides nourishment for hair growth^[3].

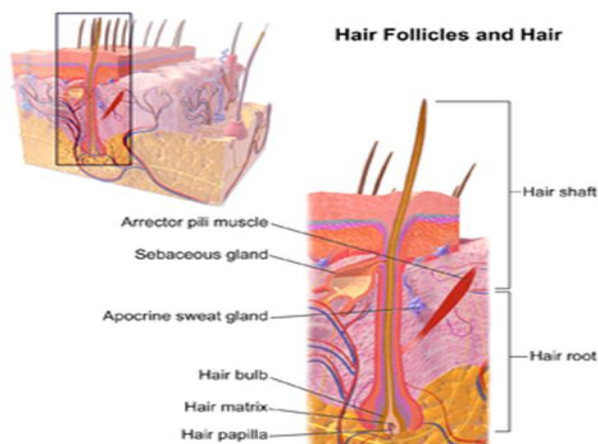
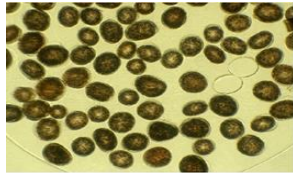


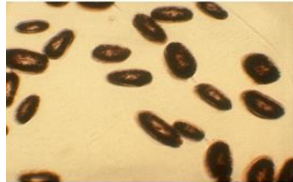
Fig: 5

The cross section of Hair

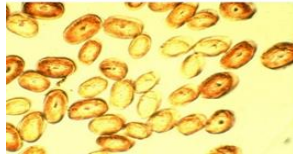
Hair commonly has the arrival of a particularly pigmented shaft with a diameter that varies from 70 μm to more than a 100 μm depending on which segment of the cycle it's miles present process. Its cross-segment is more or much less circular relying at the sort of hair: Asian human beings tend to have rigid hair with a spherical pass-phase and a diameter that could attain 100 μm , Europeans have supple hair with an oval move-phase and a diameter of between 70 μm and 90 μm , at the same time as curly African hair has an nearly kidney-formed move-phase^[2].



Asian hair has a large diameter. It is regular and nearly round in cross-section. Generally straight, it is implanted perpendicular to the scalp surface and grows at a speed of 1.3 cm/month.



African hair is very elliptical. It is curly, irregular and grows more slowly, at an average rate of 0.9cm/month.



Caucasian hair is very variable: it can be straight, wavy or curly. Its cross-section is more or less oval. It grows an average of 1.2 cm/month.

Fig:6

pH of Scalp

Healthy scalp pores and skin has a pH of 5.4 - 5.9 and a resident bacterial population. Using hair care merchandise with an excessive pH will increase the pH of the scalp pores and skin, inflicting inflammation, dehydration, and an alteration of the healthy bacterial plants, which can make a contribution in the direction of the pathogenesis of skin sicknesses. The usage of pH appropriate hair care products is critical to the prevention and remedy of these conditions and has a cosmetic effect at the hair itself. One of the most considerable differences among the composition of the pores and skin at the face and the scalp is the quantity of sebaceous glands and sweat glands. The scalp has a less efficient barrier characteristic, which means that it's miles greater at risk of water loss from the dermis. Each area of the pores and skin has an awesome microbiological niche. The environment of the scalp is particular as it consists of a huge density of sebaceous and sweat glands and as a end result, has a high relative humidity. This creates the most suitable developing situations for microbiological colonization. The skin is a nutrient-rich environment because of the continuous secretion of a deliver of amino acids, minerals, and sebum.

pH of Hair

With a pH of 3.7, the hair fibre has an extra acidic pH than the scalp. Hair consists of lengthy parallel chains of amino acids. Those chain connect through hydrogen bonding, salt bridges among acid and base organization, and through disulphide bonds. Sebum secreted by way of the scalp consists of glycerides, waxes, fatty acids, and squalene. Its feature is to coat the ceutical and prevent water loss from in the shaft of the hair. Sebum additionally carries antimicrobial dealers that inhibit the growth of bacteria consisting of streptococci and prevent fungal infections of the scalp. Due to its sticky consistency, sebum draws dust and impurities. Shampoos are formulated to do away with the impurities and the extra sebum at the same time as leaving and a moderate coating at the hair shaft that protects against moisture loss. Hair is extremely sensitive to pH version by using topically carried out products. When the hair (above 3.7), there may be a boom in the bed electrical rate at the floor of the hair fibres. This increases static power, friction and, repulsion between the strands of hair and reasons cuticle damage and breakages within the hair fibre.



Fig: 7

The benefit of using pH balanced hair care

Through using a shampoo with a low pH close to that of the hair, less frizzing occurs because of a discounted terrible static strength on the surface of the hair fiber. A barely acidic conditioner will shine to the hair as the cuticle is flattened and, therefore, able to reflect more light, Performing brilliant and wholesome^[4].

Hair problems: Hair loss, Dry hair, Dandruff, Dull hair, Frizzy hair^[3].

Hair Loss (Alopecia)

Alopecia, a dermatological ailment that has been diagnosed for greater than 2000 years is a common trouble in beauty as well as number one fitness care practices. it is a not unusual at some point of the world and has been anticipated to affect between 0.2% and a couple of the sector populace. numerous artificial drug

treatments are available for hair loss which does not deal with completely and additionally suggests intense aspect consequences. these troubles might be solved by using the use of herbal drugs.

Types of Hair loss

1. Alopecia Areata (Prime stage)
2. Temporary Alopecia Areata
3. Ophiasis Alopecia Areata
4. Alopecia Universalis
5. Alopecia Totalis
6. Traction Alopecia
7. Diffuse Alopecia

Alopecia Areata (Prime stage)

Alopecia areata is a common autoimmune disorder that consequences in the loss of hair at the scalp and elsewhere. It generally starts off evolved with one or extra small, round, non-scarring clean patches. moderate brief Alopecia Areata- affected person with repeated brief alopecia areata however never converts into alopecia totalis or universalis.

Temporary Alopecia Areata

Affected person with Alopecia areata in advanced segment and a number of them converts into Alopecia totalis/Alopecia universalis.

Ophiasis Alopecia Areata

Ophiasis form of alopecia areata suggests a band like hair loss. It takes place typically inside the revolutionary or the occipital areas of the scalp, and consequently it's far greater tough to treat, as most medicines have a deep layer motion on those areas.

Alopecia Totalis: Lack of hair from whole Scalp.

Alopecia Universalis

Lack of hair from whole frame together with eyebrows and eyelashes scar ring alopecia any inflammatory technique (burns, bacterial infections, ringworm, damage) important to cause everlasting lack of follicles, affected region known as scarring alopecia. Trichotillomania- this kind of hair loss is known as compulsive pulling or stupid self-pulling by a patient himself or herself.

Traction Alopecia: Hair elegance that tie hairs so tight can causes a lot traction at the basis of hairs, and may develop adhesion alopecia.

Diffuse Alopecia

Endless loss of hair all over the scalp without developing a reinforcement. Hair loss because of facet impact of the beauty remedies- Any splendor remedies like hair colorations, dye, straightening, softening, rebounding, perming and so

forth., which contains harsh chemicals can cause hair loss for some people. Telogen effluvium (TE) and continual telogen effluvium- (CTE) nutritional lacks, Crash dieting high grade fever, Anemia, Blood loss, Hormonal imbalance and pregnancy and so forth. can motive telogen effluvium sort of hair loss telogen word is understood for latent section of the hair and fluvium approach^[5].

Causes of hair Loss



Fig: 8

Symptoms of Hair Loss

There are several factors for the hair loss; some of the main factors are given below - Acute illness , Autoimmune disorders , Chemicals (hair dyes) ,Chemotherapeutic agents/ drugs. , Diabetes ,Hair loss following childbirth , Hair styling products , Hair styling techniques , High iron deficiency ,Nutritional deficiencies , Other fungal infections , Physical trauma to the scalp, Poisons, Poor blood circulation, Poor diet or malnutrition, Prescription drugs, Psychological, Radiation exposure, Ringworm, Skin disease, Stress, Sudden weight loss, Surgery, Thyroid disease^[5].

Home Remedies for Hair loss

1. Egg Mask:
Eggs are rich in sulphur, phosphorous, selenium, iodine, zinc and protein, which together help sell hair boom.
2. Liquorice root:





This herb prevents hair loss and in addition harm to the hair. It facilitates soothe the scalp and eliminate any dry flakes/dandruff.





3. Coconut Milk:
The protein and important fats in it promote hair boom and save you hair loss.
4. Green Tea:
This tea is wealthy in antioxidants, which help hair increase and prevent hair loss.
5. Beetroot Juice:
Beetroot is rich in vitamins C and B6, folate, manganese, betaine and potassium, all of which are essential for healthy hair growth. Besides, it acts as a detoxification agent by helping keep the scalp clean.
6. Aloe Vera:
Aloe vera an powerful home remedy for hair loss and to improve hair boom. it is also effective in decreasing troubles of scalp like itching and flaking.
7. Fenugreek seed:
Fenugreek or Methi seed is some of the foremost effective home remedies to save you the hair loss. It upkeepes the hair follicles and helps in re-increase of the hair.
8. Onion juice:
The antibacterial homes of onions help fight towards scalp infections, while the sulfur content material improves move blood to the hair follicles. It promotes hair growth and controls lack of hair. Sulfur content material improves move blood to the hair follicles. It promotes hair growth and controls lack of hair.
9. Beer wash:
Once a week for shiny, silky, tangle free, healthy black hair with no split ends. For that matter, any good beer will do^[3].


List of various Marketed Herbal Hair Tonics




S.no.	BRAND NAME	ACTIVE CONSTITUENT
1.	The EnQ ultimate hair care tonic	Amla, Bhringraj, Brahmi.
2.	Blue nectar hair tonic	Aloe Vera, Rosemary, Hibiscus, Bhringraj.
3.	Greenberry organic hair tonic oil	Jojoba oil, Murumura oil
4.	Man matters	Redensyl
5.	Ohria Ayurveda Banyan Root Hair Tonic Anti Hair Fall, Healthy & Lustrous Hair	Hibiscus, Banyan Root, Neem, Amla, Green tea, Arnica, Brahmi, Aloe Vera.




Role of ingredients which are used in herbal hair tonic

Ingredient name	Scientific Classification	Chemical Constituent	Uses
Tulsi oil 	Ocimum tenuiflorum is also known as Holy Basil	Oleanolic acid, Ursolic acid, Rosmarinic acid, Eugenol, Carvacrol, Linalol	Tulsi can help prevent hair fall. Tulsi can reduce greying of the hair and keep it thick and black. Tulsi can reduce dandruff.
Coconut oil 	Cocos nucifera	Oleic acid, Palmitic acid, Linoleic acid, Stearic acid, caprylic acid, lauric acid	Moisturizing your hair and reducing breakage. Protecting your hair from protein loss and damage when wet. Protecting your hair from environmental damage like wind, sun and smoke.
Henna  <p style="text-align: center; font-size: small;">Henna Plants</p>	Lawsonia Inermis	Phenols, Anthroquinones and Glycosides, Xanthones	Henna enhances Hair growth. Restore and beef up Hair. Regulates oil Secretion. Situations Hair. Coloring Hair with Henna.
Amla 	Emblica Officinalis	Ellagic acid, chebulinic acid, gallic acid, chebulagic acid, leutolin	Amla contains oodles of essential fatty acid that penetrate into the follicles making the hair softer, shiner, and voluminous.

<p>Hibiscus</p> 	<p><i>Hibiscus rosa-sinesis</i> Linn</p>	<p>Flavonoids, Anthocyanins and cyaniding -3, 5-diglucoside, cyaniding-3-sophoroside-5-glucoside,</p>	<p><i>Hibiscus rosa-sinesis</i> have hair boom promoting and antigreying properties.</p>
<p><i>Ziziphus jujube</i></p> 	<p><i>Ziziphus jujube</i> L.</p>	<p>Chryseoriol, chryseriol-O-pentosylrhamnosid, jujubasaponin IV, jujuboside B.</p>	<p>The addition of stearic acid to the coconut oil keeps acidic ph (<5), this acidic ph will increase the blood float, due to the fact human hair and scalp oil. <i>Ziziphus jujube</i> leaf has anti-bacterial activity which make it useful against Dandruff and scalp infections.</p>
<p>Gotu kola</p> 	<p><i>Centella asiatica</i></p>	<p>pentacyclic triterpenoids, Asiaticosids, Brahmoside, Asiatic acid, Brahmic acid.</p>	<p>It's used to reinforce hair and sell hair increase. it's concept to growth hair duration and stimulate hair increase, possibly by using growing blood flow to the scalp.</p>
<p>Rosemary oil</p> 	<p><i>Rosmarinus officinalis</i></p>	<p>p-cymene (44.02%), linalool (20.5%), gamma-terpinene (16.62%), thymol (1.81%), beta-pinene (3.61%), alpha-pinene (2.83%) and eucalyptol (2.64%).</p>	<p>It makes your hair gentle and vibrant with regular use. Stimulates hair follicles which ends up in faster hair boom</p>

<p>Aloe Vera</p> 	<p>Aloe barbadensis</p>	<p>vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids</p>	<p>you could directly practice the raw aloe vera gel to your hair and scalp. paintings it in along with your fingers into your scalp, hair, and ends</p>
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<p>Brahmi</p> 	<p>Bacopa monnieri</p>	<p>Hersaponin, apigenin, cucurbitacin, D-mannitol</p>	<p>Brahmi is used for Alzheimer disease, Improving memory, anxiety, allergic conditions.</p>
<p>Jatamansi</p> 	<p>Nardostachys jatamansi</p>	<p>α-bulnesene, isovaleric acid, α-guaiene, 3-methylvaleric acid</p>	<p>helps to control hair fall and promote hair growth when applied to the scalp.</p>
<p>Fenugreek</p> 	<p>Trigonella foenum-graecum</p>	<p>carbohydrates, proteins, lipids, alkaloids, flavonoids, fibers, saponins, steroidal saponins, vitamins, and minerals</p>	<p>frequently used as a natural home remedy for thinning hair and other related conditions, such as dandruff or a dry, itchy scalp.</p>

<p>wolfsbane</p> 	<p>Arnica Montana</p>	<p>Sesquiterpene lactone, Helenalin</p>	<p>help in controlling hair fall and also promotes hair growth.</p>
<p>Bhringraj</p> 	<p>Eclipta prostrata</p>	<p>wedelolactone, wedelic acid, apigenin, luteolin, b- amyryn</p>	<p>Mix with Coconut oil and massage on the scalp. Leave it for 1-2 hours and wash it with any herbal shampoo. Repeat this thrice a week to fight hair fall and premature greying of hair</p>
<p>Capsicum</p>  <p><small>shutterstock.com · 1456608254</small></p>	<p>Capsicum annum Linn</p>	<p>Capsaicin, Dihydrocapsaicin, Piperine</p>	

Medicinal properties of herbal hair tonic

Antibacterial activities

Tulsi oil at concentrations of 4-5 and a couple of 0.25% absolutely inhibited the increase of *S. aureus*, along with MRSA and *E. coli*, at the same time as the equal concentrations only partly inhibited the increase of *P. aeruginosa*^[11]. Jojoba oil would not kill all bacterial or fungal species, it does kill sure microorganism and fungi which can purpose salmonella, an *E. coli* contamination, and candida^[12]. aureus. the amount of excessive l. a. (forty–60%) specially within the shape of loose fatty acids and monoglycerides in coconut oil has antibacterial pastime.

Henna leaf extracts have antimicrobial hobby on the microorganism chargeable for the commonplace skin infections. Alcoholic and oily henna extracts have comparable consequences to a number of the antibiotics typically utilized in clinical exercise^[13]. The 5% aqueous extract of Amla has been said to showcase the very best ZOI, indicating powerful antibacterial activity⁴⁶. The amazing antibacterial hobby of EO towards several microorganisms may be credited to tannins present in its end result^[14].

Antifungal activities

Of these plant substances, 3 showed various stages of antifungal hobby against both species. Tulsi (*Ocimum sanctum* Linn.) essential oil (TEO) become found to be the best. Jojoba oil incorporates antimicrobial and antifungal properties. whilst lab checks determined that jojoba oil would not kill all bacterial or fungal species, it does kill positive bacteria and fungi that may motive salmonella, an *E. coli* infection, and candida.

Coconut oil is an powerful anti-fungal. research imply that coconut oil may be powerful against *Candida albicans*, a form of fungus this is most usually liable for fungal infections. Henna has an antifungal effect and will be used to treat fungal infection rather to the medication. Antifungal activity of Amla extracts in opposition to dandruff causing pathogens (*Malassezia* sp.) Amla (*Emblica officinalis*) is a vitamin C wealthy fruit has a extensive variety of medicinal properties acknowledged from the ancient length^[12-14,17,18].

Strengthness of hair activities

Tulsi enables keep moisture in your scalp and improves blood circulate, reduces itchiness and dryness, strengthens the hair follicles and makes the roots healthy. Jojoba is rich in vitamins and minerals that nourish hair, including vitamin C, B vitamins, vitamin E, copper, and zinc. Because it strengthens hair, it is also thought that jojoba oil can prevent hair loss and promote hair thickness. Coconut oil may help strengthen the hair shaft and prevent breakage. You can use coconut oil as an alternative to standard conditioners. Or add a few drops of the oil to your usual conditioner to boost its smoothing effect.

Henna is completely secure and has no aspect effects. It strengthens and smoothens your hair shaft and gives you a lustrous shine. It additionally offers fabulous hair coloration insurance, making the shade richer with every application. Amla juice serves as a beneficial tonic for each pores and skin and hair. It strengthens your hair follicles thereby facilitating hair growth and strengthening of the hair^[12-14].

Conclusion

Herbal primarily based hair tonic has been organized. frequent use of this product ends in moisten the hair and scalp, improving the scalp's pH stability. A herbal hair tonic provides shine and smooth to the hair in an utmost mild way. The advantage of herbal primarily based cosmetic merchandise are their anti-bacterial, anti-fungal, anti-microbial sports. Herbal formulations are in great demand to meet the needs of the developing global market. Tonics make the hair appearance glossier, which is viewed by means of many human beings as a signal of healthful hair. They help hold the hair in vicinity, making it easier to style. Other blessings consist of moisturizing dry hair, lubricating a dry scalp, decreasing cut up ends and broken hair, and supporting to govern dandruff. The quicker scientific assistance is given, the higher the threat for recovery. Swallowing a big quantity of hair tonic can reason liver failure.

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