Available online on 15.06.2020 at <http://jddtonline.info>

# Journal of Drug Delivery and Therapeutics

Open Access to Pharmaceutical and Medical Research

© 2011-18, publisher and licensee JDDT, This is an Open Access article which permits unrestricted non-commercial use, provided the original work is properly cited



Open Access

Review Article

## Review on Hair Problem and its Solution

Ameya Lanjewar<sup>\*1,2</sup>, Soni Maurya<sup>3</sup>, Devender Sharma<sup>4,5</sup>, Anchal Gaur<sup>6</sup><sup>1</sup> Department of Pharmaceutical Analysis, Madhyanchal professional university, Bhopal-462044, India<sup>2</sup> Department of Analytical Research and Development (Research officer), Zim Laboratories LTD., Kalmeshwar, Nagpur, Maharashtra-440013<sup>3</sup> Department of Pharmaceutics, Mumbai educational trust institute of Pharmacy, Mumbai, Maharashtra 400050, India<sup>4</sup> Department of Pharmaceutics, Lovely Institute of Technology (Pharmacy), Lovely Professional University, Punjab-144411, India<sup>5</sup> Department of Pharmaceutics, Goenka College of Pharmacy, Sikar, Rajasthan-332315, India<sup>6</sup> Department of Pharmaceutics, Babu Banarsi Das Institute of Technology, Ghaziabad, Uttar Pradesh- 201206, India

### ABSTRACT

Hair is simple in structure. Hair is formed of an extreme protein called Keratin. Cleanser may be a hair care item, ordinarily as a gooey fluid, that's utilized for cleaning hair. The problems related with it incorporate male pattern baldness, raucous hair, absence of hair volume, molding, youthful turning gray, dandruff, diminishing of hair, bluntness then on. Male pattern baldness are often caused due to various reasons, for instance, hereditary propensities, ecological triggers and presentation to synthetic compounds, medications, healthful inadequacy, outrageous pressure or long ailment then on. Gentle dandruff can for the foremost part be settled by washing the hair a day with a mellow cleanser hair. Sedated hostile to dandruff cleanser clean both the hair and scalp and leave the hair reasonable, not bother sebaceous organs. It contains an enemy of microbial to forestall development of expanded occurrence of microorganisms. Dynamic material ought not sharpen the scalp and diminish the extent of tingling and scaling. The most objective of article give idea about hairs problem, the way to solve these problems with cost effectiveness and also help to pick the which sort of treatment with selective dosage form preparation as per hairs problem by researcher for society.

**Keywords** Antidandruff, Surfactants, Shampoo, Scalps

**Article Info:** Received 08 March 2020; Review Completed 18 May 2020; Accepted 26 May 2020; Available online 15 June 2020



### Cite this article as:

Lanjewar A, Maurya S, Sharma D, Gaur A, Review on Hair Problem and its Solution, Journal of Drug Delivery and Therapeutics. 2020; 10(3-s):322-329 <http://dx.doi.org/10.22270/jddt.v10i3-s.4066>

### \*Address for Correspondence:

Ameya Lanjewar, Department of Pharmaceutical Analysis, Madhyanchal professional university, Bhopal-462044, India

## Introduction

### Hair

Hair is an important part of human body. The problems associated with it includes hair loss, unruly hair, lack of hair volume, conditioning, immature 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 is also wants to decrease friction, to guard against sunlight, and to act as a way organ. Hair is 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.<sup>1,2,3</sup>

Hairs also help in bringing the confidence and pride in a person, no matter of which genders the person belong. It always had been the dream of a person to have black, healthy, shiny and good quality hair. No matter they are long or short and to keep and maintain them are amongst the priority of all the people.<sup>1,2</sup>

### Hair structure

Hair consists of two parts:

#### 1. 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:

- A. Infundibulum: Extends from the surface opening of the follicle to the level of opening of its sebaceous gland.
- B. Isthmus: Extends from the infundibulum to the level of insertion of the arrector pili muscle.
- C. 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. [3,4,5]

## 2. Shaft

The hair shaft is divided into three layers:

- A. Medulla: It is the middle of hair. it's going to be fragmented or segmented and continuous or doubled.

It are often a hollow tube or crammed with cells. Most hairs don't contain a medulla, while other have medullas that are discontinuous or fragmented. It forms the middle of the hair shaft. Fine hairs especially tend to lack this layer.

- B. Cortex: It is largest part of hair shaft which provides the color to hair i.e. melanin (hair pigment).
- C. Cuticle: The cuticle may be a transparent outer layer of the hairs shaft. It's made from scales that overlap each other and protect the inner layers of the hair. The scales point from the proximal end of the hair, which is closest to the scalp and to the distal end. 2,3,4.

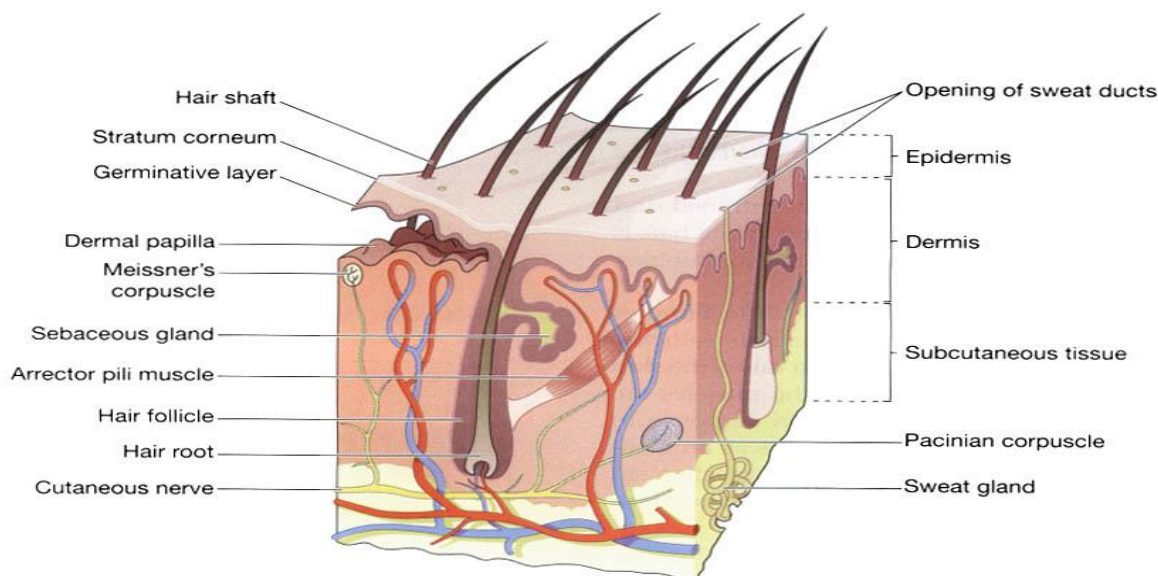


Figure 1 Structure of hair

## Hair Cycle

Each sort of hair undergoes repeated cycle of active growth and rest. The relative duration of every cycle varies with the age of the individual and therefore the region of the body where the hair grows. The cyclic phase of the follicle is identified by a lively growth period referred to as anagen, catagen (the intermediate period) and telogen a resting stage.

- Anagen phase

The follicle reaches to its maximum length and there is proliferation of the matrix cells, which produces the internal root sheath, cortex and medulla of the hair shaft and the cuticular layers of the hair shaft and the inner sheath. In epilated anagen hair the inner and outer sheaths are intact and are wrapped around the bulb portion of the hair.

- Catagen phase

The hair in its involutinal form, differs from telogen (clubbed) hair in two ways:

- Its keratinized (proximal) part is darker than that of clubbed hair.
- Its inner and outer sheaths are better preserved.
- Telogen phase

Hair could also be wrapped within the remains of an epithelial sac, which is absent from nongrowing, spontaneously shed clubbed hair of the 100,000 to 105,000 scalp hairs on a person's adult (regardless of sex), 90% are within the growing or anagen phase. The remaining 10% are within the resting (telogen) phase. 1,2,5

## Product Safety Testing

Cosmeceuticals are used repeatedly and over an extended period of time. These preparations will need to act as drugs and cosmetics. Therefore the safety testing criteria of drug also as cosmetic products are applicable for these preparations. The test is depends on the sort of product and ingredients. Some tests are given below. 6,7,8

## Chemical irritants

Irritant compound can cause an inflammatory response immediately on contact or after many day or weeks. The severity of physiological response may be a results of cellular antigen antibody reaction and typically depends on the strength of the irritant and duration of exposure. Usually, the irritated tissue heals within 2-3 days if the substance is totally removed testing a cosmeceutical product for its irritancy potential involve both animal (Draize rabbit test) and human testing (patch testing). 9,10

## Eye irritation testing

Although cosmeceutical products aren't usually put already in eye, the accidental contact with such product like face makeup shampoo and skin cream is high. The tissue of eye become inflamed when exposed to irritants. The first preclinical trial to live the ocular irritation of a substance is that the draize eye irritation test. For this test one eye of rabbit is treated with the test material while other remains the untreated control. Irritation read on various eye structures, including cornea, conjunctiva and iris are measured at intervals during the subsequent week.

To ensure general safety, ocular irritation is additionally evaluated within the human eye. One test involves putting the substance directly into the attention and evaluating for irritancy potential, another involves ocular evaluation under actual product use conditions.<sup>11,13</sup>

## Controlled usage testing

Controlled usage testing provides additional information which animal or patch testing don't yield. For this sort of volunteers receive the merchandise and use it throughout a define period (2-8 week) subjects are evaluated regularly and are asked to supply subjective data. This method provides an irritancy potential of fabric under conditions that reflects how consumer would use the merchandise.<sup>12,14,15</sup>

## Hair Problem

### Hair Loss

Although historically discussed as a haul among men, hair loss/thinning hair is additionally common among women. For several men, it's getting to be male pattern balding. Female hair loss is typically caused by stress, medication, changing hormones, and even menopause. Additionally, many hair styling products (chemicals/excessive heat) can contribute to hair loss.<sup>12,14,16</sup>

### Dry Hair

Shampooing too often causes dry hair. Although squeaky clean hair may be a good thing, many overdo it by washing once, sometimes twice or per day which will strip away all of the hair's natural oils.

### Spit Ends

Over-brushing hair, excessive perming, too much heat, and lack of a good conditioner cause split ends.

### Oily/Greasy Hair

Oily hair is caused when the scalp produces an excessive amount of natural oil called sebum. Sebum is produced by sebaceous glands, which may sometimes "work overtime", leading to excessive amounts of oil.

### Frizzy Hair

Frizzy hair occurs when the hair's moisture level falls below normal levels, and it can also be hereditary.

### Dull Hair

There are many causes of dull-looking hair chemical or heat styling damage, and environmental soils.

### Heat Damaged Hair

Use your curling iron or flat iron too much and your hair will become damaged.

## Colour Damaged Hair

When you colour your hair, chemicals are used to open your hair shaft, leaving your hair extremely porous and prone to brittleness and breakage.

### Gray Hair

To many, gray hair is a badge of honor. But others would prefer to get rid of it because gray hair can be brittle and more unruly than other strands.<sup>17,18</sup>

### Dandruff

Dandruff is little white pieces of dead skin in someone's hair, or fallen from someone's hair. It's apparently caused by a fungus called *Malassezia restricta* and *Globosa malassezia* formerly called *Pityrosporum* may be a yeast causing infection of skins and scalp. It's caused by not brushing hair, allergy, stress, not showering enough etc.<sup>1,20,21</sup>

## There are two types of dandruff

### Dry dandruff

Dry (universal) dandruff known to be caused by Pityri as is simplex and is characterized by excessive development of minute scales of white grayish or ash color accumulate on the scalp area. Scales visible on the scalp are divided cells of keratinised layer whose renewal cycle is pathologically compact. During this sort of dandruff, no excessive hair loss is observed.<sup>6,18</sup>

### Oily dandruff

Other sort of dandruff is named oily dandruff or Pityriasis steatoides. It arises on the scalp skin with varied intensity of sebum production. It appears mainly frequently in young men next puberty. Inflammation of various intensity develops on the scalp skin alongside the looks of oily scales of dirty yellow colour which will form lesions. These lesions are often related with pruritis of various intensity. Hairfall is ordinary. It's going to also exacerbate androgenetic alopecia, the foremost common site suffering from this sort of dandruff is scalp but it can arise among eyebrows along the side of nose behind the ears over the breastbone and sometimes within the armpits.<sup>22,23,24</sup>

## Cause of Hair problem

Life vicissitudes, including illness, emotional trauma, protein deprivation (during strict dieting), and hormonal changes like those in pregnancy, puberty, and menopause may cause hair loss.

Several health conditions, including thyroid disease, iron deficiency anaemia, and syphilis, can cause hair loss. While thyroid blood tests and other lab tests, including an entire blood count (CBC), on people that have ordinary hair loss are usually normal, it's important to exclude treatable causes of hair loss.<sup>24,28,29</sup>

Hair loss is typically related to one or more of the following factors:

- Childbirth,
- High fever
- Sudden weight loss (crash dieting)
- Severe illness
- Surgery
- Severe emotional stress or loss.
- Family history (heredity)

- Hormonal changes and medical conditions.
- Medications and supplements.
- Radiation therapy to the head.
- Hairstyles and treatments.
- Stressful event

## Symptoms

Hair loss can appear in many various ways, counting on what's causing it. It can come on suddenly or gradually and affect just your scalp or your whole body. Some sorts of hair loss are temporary, and others are permanent.<sup>1,6,23</sup>

Signs and symptoms of hair loss may include:

- **Gradual thinning on top of head**

This is the foremost common sort of hair loss, affecting both men and ladies as they age. In men, hair often begins to recede from the forehead during a line that resembles the letter M. Women typically retain the hairline on the forehead but have a broadening of the part in their hair.

- **Circular or patchy bald spots**

Some people experience smooth, coin-sized bald spots. This sort of hair loss usually affects just the scalp, but it sometimes also occurs in beards or eyebrows. In some cases, your skin may become itchy or painful before the hair falls out.

- **Sudden loosening of hair**

A physical or emotional shock can cause hair to loosen. Handfuls of hair may begin when combing or washing your hair or maybe after gentle tugging. This sort of hair loss usually causes overall hair thinning and not bald patches.

- **Full-body hair loss**

Some conditions and medical treatments, such as chemotherapy for cancer, can result in the loss of hair all over your body. The hair usually grows back.

- **Patches of scaling that spread over the scalp**

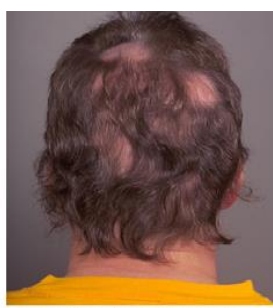
This is a sign of ringworm. It may be accompanied by broken hair, redness, swelling and, at times, oozing.<sup>23</sup>



Male-pattern baldness



Female-pattern baldness



Patchy hair loss



Traction alopecia

Figure 2 Symptoms of Hair loss

## Prevention

Most baldness is caused by genetics (male-pattern baldness and female-pattern baldness). This type of hair loss is not preventable.

These tips may help you avoid preventable types of hair loss:

- Avoid compulsively twisting, rubbing or pulling your hair.
- Treat your hair gently when washing and brushing. A wide-toothed comb may help prevent pulling out hair.
- Avoid tight hairstyles, such as braids, buns or ponytails.
- Avoid harsh treatments such as hot rollers, curling irons, hot oil treatments and permanents.
- Stop smoking. Some studies show an association between smoking and baldness in men.
- If you are being treated with chemotherapy, ask your doctor about a cooling cap. This cap can reduce your risk of losing hair during chemotherapy.
- Avoid medications and supplements that could cause hair loss.

- Protect your hair from sunlight and other sources of ultraviolet light.

## Treatment

Although hair issues certainly vary from person to person, by following these simple steps, these common problems are easily repairable. Your hair problems will soon be a thing of the past and you will get on your thanks to an excellent head of hair before you recognize it. If you're busy and don't have time, you'll always get your hair done at a beauty school salon.

## Shampoo

Shampoo could also be defined as a preparation containing surface active agents which remove dirt, grease and debris from the hair, scalp and other parts of body without affecting the natural gloss of hair. Shampoo is described as a cosmetic preparation meant for the washing of hair and scalp, packed within the form for convenient use. Shampoo is liquid or cream preparation of soap or detergent wash hair and scalp. Shampoo may produce lubrication, conditioning, and drugs etc.<sup>1,12,19</sup>

There are many different type of shampoo is available as it is,

- Powder shampoo
- Clear liquid shampoo
- Liquid cream or lotion shampoo
- Jelly shampoo
- Aerosol shampoo
- Baby shampoo
- Medicated anti-dandruff shampoo
- Cream or paste shampoo
- Conditioning shampoo

### Ideal characteristics of Shampoo

#### 1. Remove debris

Generally debris is not removed by using simply water, whereas it is often removed easily by use of shampoo. Water can remove most visible dirt and debris, but won't eliminate odors or oily deposits. Shampoo helps water remove dirt, debris and odors like smoke or sweat effectively.

#### 2. Lathering power

As stated earlier good foaming is important for a shampoo based because it has psychological value. a neighborhood from psychological value, foam allows assessment of the quantity of shampoo required to make sure that each one functions involved in cleansing are performed.

#### 4. Speed of drying

Drying of the hair in shampooing is that the most, tedious process. Some detergent leave the hair very wet, dry very slowly, other leave behind a hydrophobic surface which may shed water early and thus making drying process faster.<sup>17,18</sup>

#### 5. Safety

Although cosmeceuticals products aren't usually put already within the eye, the accidental contact with such product like face structure shampoo and skin cream is high. The tissue of eye become inflamed when exposed to irritants. The detergent based should be non-irritating and non-toxic to the scalp.<sup>17,18</sup>

#### 6. Face of combing wet hair

Combing of wet hair will evaluate roughness and tangling tendency immediately after treatment with the detergent but simple removal of the oily material is not the whole story. A desirable detergent based should leave the wet hair in a condition where it will be easy to comb wet hair.

#### 7. Luster of the hair

Soap in hard water is likely to leave dull films of insoluble calcium and magnesium soaps on the hair. Some detergents with insufficient suspending power may redeposit dirt or grease on the hair with dulling effect. Detergent based should not leave dulling material on the hair after shampooing become lustrous.

#### 8. Well preserved and good stability

The product must be properly preserved against bacterial and fungal contamination. It should have good stability for at least two to three years at room temperature.

#### 9. Easy rinsing

Some detergent based can be rinsed easily while other continues lathering and rinsing appears endless.

#### 10. Economical

The product should not be over formulated. The formulation should be as simple and cost effective as possible, using only those raw materials that are easily available and are necessary to accomplish the desired goal.

#### 11. Efficient soil removing

Detergent base for shampoo should remove grime, oil, scalp debris etc. in soft and hard water. In vitro study on this aspect may be carried out by hair switches soiled with synthetic sebum.

#### 12. Ease of application spreading

A shampoo made with a detergent base should be easy to spared i.e. it should be distributed over the hair.

#### 13. Good stability

The product should have good stability for at least two or three years at room temperature as well as when stored in daylight or in warehouses with low or high ambient temperatures.<sup>13</sup>

#### 14. Low level of irritation

The formulator should try to accomplish all of the above qualities while keeping the irritations level as low as possible.

#### 15. Easy of combing and setting the dry hair

After rinsing, the hair should be combing easily without tangling. The hair should have body when dry, that is hair should not be limp or over conditioned.

### Evaluation Parameter of Shampoos

#### pH

The pH of shampoos has been shown to be important for improving and enhancing the qualities of hair, minimizing irritation to the eyes and stabilizing the ecological balance of the scalp. The present trend to market shampoos follower pH is one among the ways to attenuate damage to the hair. Mild acidity prevents swelling and promotes tightening of the scales, there by inducing shine.<sup>6,7,18</sup>

#### Percent of Solids Contents

If the shampoo has too many solids it will be hard to work into the hair or too hard to wash out.

#### Rheological evaluations

The results of rheological evaluation showed that the viscosity of the samples changes gradually with the rise in rpm, therefore the shampoo formulations were time dependent. Secondly because the data showed the viscosity decreases with increase in rpm, therefore the shampoo formulations were shear thinning or pseudo plastic in nature.

#### Detergency ability

Although cleaning or soil/sebum removal is that the primary aim of a shampoo, experimental detergency evaluation has been difficult to standardize, as there's no real agreement on a typical soil, a reproducible soiling process or the quantity of soil a shampoo should ideally remove.

### Foaming ability and foam stability

Although foam generation has little to do with the cleansing ability of shampoos, it's of paramount importance to the buyer and is therefore a crucial criterion in evaluating shampoos.

### Raw Materials Required For Preparation of Shampoo

#### Surfactant

Surfactants are used to enhance the foaming property of shampoos. Four different types of surfactants are available in the market.<sup>13</sup>

#### Cationic surfactants

Cationic detergents produce foam well and have reasonable cleansing power. They also leave hair luster and freed from electrostatic charge. It would, therefore, appear that cationic detergents are ideal for shampoos. But thanks to its tendency to irritate eye tissues, they are not used frequently in shampoos. Examples are quaternary ammonium salts, amines with amide linkages.

#### Non-ionic surfactants

Non-ionic detergents have sufficient cleansing power but only a couple of have sufficient foaming properties. Therefore, these aren't used as principal foaming agents. However, these have remarkable foam booster and stabilizing properties and intrinsically, are used as foam boosters and stabilizers. These are mild and non-irritating to the skin. Some newly developed non-ionics possess good foaming power and may be used as principal foaming agents. Examples are carboxylic esters, glycol ester of carboxylic acid, anhydrosorbitol ester.<sup>6,7,18</sup>

#### Anionic surfactants

Anionic surfactants include a number of class of compounds out of which important ones are mentioned here in context with hair preparations. Examples are carboxylates, sulphonates, alkyl sulphates.

#### Amphoteric surfactants

Amphoteric surfactants are known for their mildness and are used in mild shampoos. These are compatible with wide range of surfactants. Examples are N-alkyl aminoacids, betaine, alkyl imidazolines, N-coco 3-aminopropionic acid.

#### Viscosity modifier

These agents improve the viscosity of formulation. Examples are electrolytes like ammonium chloride and Sodium chloride, Natural gum like gum karaya and gum tragacanth, cellulose derivatives like Hydroxyethyl cellulose, hydroxypropyl cellulose, carboxymethyl cellulose. Others are TEA soaps, alkanolamides, phosphate esters, amidoamine oxides.<sup>1,28,29</sup>

#### Opacifying and Clarifying agents

A number of materials can be used for opacifying or giving pearlescent effect. May improve by solubilizing alcohols, phosphates or non-ionic solubilizers. Examples are Propylene glycol, glycerol monostearate, palmitates, ethanol, isopropanol esters.

#### Conditioning agents

These agents are intended to improve manageability, feel & luster of the hair. The materials which have been claimed to have conditioning effect on hair. Examples are lanolin,

mineral oil, and natural products like polypeptides, herbal extracts, resins, quaternary compound, silicon, and lecithin.

#### Sequestering agents

It used to prevent deposition of calcium and magnesium salts of soaps on to the hair. Examples are EDTA salts, polyphosphates, citric acid.

#### Perfumes

There are two important aspects which should be ascertained before final selection of fragrance for shampoos. Fragrance must be soluble in shampoo and it should be compatible with it. Examples are herbal, fruity or floral fragrances can be used in shampoo.<sup>17,18</sup>

#### Preservatives

Surfactant in shampoos tends to interfere with bactericidal activity of antibacterial in order that high concentrations of preservatives are necessary in shampoos. Many manmade products are susceptible to microbial attack, if not preserved efficiently. Bacterial growth in shampoos can cause breakdown of detergents in shampoo leading to discoloration of the merchandise. One important fact to be kept in mind while selecting preservatives for shampoos is that surface in shampoo tend to interfere with bactericidal activity of antibacterial therefore higher concentration of preservatives are necessary in shampoos. Examples are parahydroxy carboxylic acid, alcohol, formaldehyde, benzoate of soda, butyl paraben.<sup>1,12,19</sup>

#### Conditioner

1. Conditioner is that the backbone of one's hair-care routine. Conditioner refortifies the cuticle with a protective coating, allowing the hair to stay growing and not break easily. When the hair is exposed to the surface world, the cuticle, or outer lining, gets damaged until it ultimately breaks; the conditioner fills in those injuries and coats the hair to help the cuticle. Conditioner may be a conditioning or moisturizing agent generally made from ingredients like silicones, oils, and emollients, also as cationic surfactants. When combined, these ingredients replenish hair's moisture. There are various sorts of conditioner, too. Of the foremost common are in fact your traditional post-shampoo hydrator; deep conditioner, which is nearly sort of a hair mask therein it's meant to be left on longer so as to penetrate the strands more deeply.

#### 2. Cleansing conditioner

Which acts as shampoo and conditioner hybrid that simultaneously cleanses and conditions the hair; and leave-in conditioner, a post-shower, no-rinse treatment that nourishes and protects the hair throughout the day.

#### 3. Dry conditioner

According to cosmetic chemist Ron Robinson, is designed to spritz on just enough to make your hair shinier, smoother, and softer, without the risk of over applying or making hair greasy.<sup>1,5,28</sup>

#### Home remedies:

##### 1. Egg mask

Eggs are rich in sulphur, phosphorous, selenium, iodine, zinc and protein, which together help promote hair growth.

## 2. Liurice root

This herb prevents hair loss and further damage to the hair. It helps soothe the scalp and get rid of any dry flakes/dandruff.

## 3. Coconut Milk

The protein and essential fats in it promote hair growth and prevent hair loss.

## 4. Green tea

This tea is rich in antioxidants, which help boost hair growth 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 is an effective home remedy for hair loss and to boost hair growth. It is also effective in reducing problems of scalp like itching and flaking.

## 7. Fenugreek seeds

Fenugreek or Methi seed is among the foremost effective home remedies to prevent the hair loss. It repairs the hair follicles and helps in re-growth of the hair.

## 8. Onion juice

The antibacterial properties of onions help fight against scalp infections, while the sulfur content improves circulation blood to the hair follicles. It promotes hair growth and controls loss of hair.

## 9. Amla

Indian Gooseberry or Amla is another effective home remedy to prevent hair fall. one among the causes is that the deficiency of vitamin C, hence consuming amla will strengthen the hair follicles and assist you to regulate it. Because of its anti-inflammatory and therefore the exfoliating properties, amla help promote faster growth of hair, maintain a healthy scalp and prevents premature greying.<sup>20,21,22</sup>

## Tips for controlling hair loss

### Diet and Exercise

You need to feed your hair all the right nutrients particularly plenty of protein and iron. However, along with eating a balanced diet ensure you are exercising side by side. Yoga and meditation are effective in reducing hair fall. And make them brittle.

### Chemical Treatment

Undergoing rigorous hair treatments like straightening, perming and colouring is certainly not kind to your tresses. Further avoid using blow dryers, curling rods, especially on wet hair as they really boil the water in your hair shaft and make them brittle.

### Oiling

Oiling improves blood circulation and nourishes the roots. Confirm to massage your tresses once every week with oil that suits your scalp. Cover it with a cap and wash it off with a light shampoo after two hours.

## Too many styling products

Using too many chemically laden products on your hair could prove harmful within the end of the day. It's best to offer them an opportunity and check out natural homemade insteads recipes.<sup>1,5,28</sup>

## Diet for healthy hair

While treatments and shampoos do play a role in maintaining healthy hair, the secret to thick, shiny, strong tresses is a healthy diet.

### Spinach

Iron deficiency is that the main explanation for hair falls. Spinach isn't only an excellent source of iron but also vitamin A, C and protein. It also contains sebum which acts as a natural conditioner for hair and provides us with omega-3 acid, magnesium, potassium and calcium. These help in maintaining a healthy scalp and lustrous hair.

### Carrots

Known to be good for the eyes, carrots contain vitamin A that also improves hair growth. Deficiency of vitamin A may cause dry and itchy scalp. Carrots are known to feature to the thickness of hair, make hair lustrous, improve blood circulation, strengthen the hair, protect hair from external damages like pollution and also help prevent breakage of hair and hair fall.

### Eggs

Since hair consists of 68 percent keratin protein, eggs help in rebuild damaged hair. They're also rich during a B-complex vitamin called biotin that helps hair grow.

### Oats

Oats are rich in fibre, zinc, iron, omega-6 fatty acids and polyunsaturated fatty acids (PUFAs) that stimulate hair growth and will make your hair thick and healthy.

### Walnuts

Walnuts contain biotin, B vitamins (B1, B6 and B9), Vitamin E, many protein and magnesium - all of which strengthen hair cuticles and nourish the scalp. It helps protect your cells from DNA damage which can be caused thanks to sun exposure.

### Lentils

Lentils are an excellent source of protein, iron, zinc, and biotin. They are also loaded with vitamin B and C which is important for restoring the health of red blood cells that provide the skin and scalp with much needed oxygen.

### Chicken

Lean meats like chicken or turkey are rich in high-quality protein which strengthens fragile hair and prevents breakage.

### Strawberries and guavas

Strawberries contain high levels of silica. Silica may be a trace mineral vital for hair strength and hair growth. Other foods rich in silica include rice, oats, onion, cabbage, cucumber and cauliflower. Vitamin C also prevents hair from becoming brittle and breaking. While we frequently consider oranges because the best source of vitamin C, one guava packs four to 5 times the maximum amount.

## Yoghurt

Yogurt is packed with Vitamin B5 and Vitamin D that are known to promote hair follicle health.

## Sweet potatoes

Beta carotene protects against dry, dull hair and stimulates the glands in your scalp to form an oily fluid called sebum. Orange coloured fruits and vegetables like carrots, pumpkin, cantaloupe, mangoes and sweet potatoes are an excellent source of this. <sup>22,23,24,25,26</sup>

## Conclusion

This review gives knowledge about detail chemistry hairs with its problems and also provides their solutions. This text also main specialize in the hair problem and with its solutions like allopathic, other remedies. It helps to researcher to seek out area of problems where easy to solution concerning hairs and also provides selection best polymers utilized in the preparation of dosage form for treating the hairs problems with cost effectiveness and its better stability with selecting proper preservatives. It also helps within the formulation of shampoo with its ideal properties.

## References

- Gahlawat J, Sharma D, Thakur GS, Chobdar J, Sharma V. Formulation and evaluation of polyherbal liquid shampoo. *European Journal of Biomedical and Pharmaceutical Sciences. EJBPS.* 2019, 6(7):149-154.
- Fuchs E, Alonso L. The hair cycle. *J. cell Sci.* 2006; 119:391-393.
- Ross J and Miles GD. An apparatus for comparison of foaming properties of soaps and detergents. *Oil Soap*, 1941; 18(5):99-102.
- Shah P, Dasani S. Preparation of herbello-an herbal antidandruff shampoo. *IJPBS*, 2015; 5(2):220-228.
- Andl T, Reddy S.T, Gaddapara T, Millar S.E, WNT. Signals are required for the initiation of hair follicle development. *Developmental Cell* 2002; 2(5):643-653.
- Gaud R.S. and Gupta G.D., *Practical Physical Pharmacy*, 1st ed., C.B.S. Publisher and Distributer, New Delhi, 2001; 81-105.
- Balsam M.S, Sagarin E, Gershon S.D, Rieger M.M. 2008, *Cosmetics- Science and Technology*, 2<sup>nd</sup> edition, Vol. 2 Published by Wiley India Pvt. Ltd. New York, PP 174-184.
- Mitsui T.1997, *New cosmetic science*, 1<sup>st</sup> edition, Published by Elsevier Science Amsterdam The Netherlands PP 47-64.
- Johnson D.M. 1997, *Hair and Hair Care*, *Cosmetic Science and Technology series Vol. 17*, Published by Library of Congress CatalogingMarcklDekkar Inc. New York. PP 13-30.
- Potluri A, AsmaShaheda SK, NeeharikaRallapally, Durrivel S, and Harish G.A, Review on herbs used in anti-dandruff shampoo and its evaluation parameters. *Indo American J. Pharm. Res.* 2013; 3266-3278.
- Rieger M.M, Banker G.S. *Pharmaceutical dosage forms: Disperse system. Encyclopedia of Pharmaceutical Technology.* Marcel Decker, New York. 1988; 3:361-373.
- The Drug and Cosmetic Act, 1940 ACT NO- 23 OF 1940 1 Published by Ind. Drug Manufacturers Association. 2005. PP 1-25.
- Zeffren E, Method for the coloring of hair. *Cosmetic and Toilet.* 1983; 98(1):48-56.
- <https://www.news-medical.net/health/what-is-dandruff.aspx>.
- Agkerman A.B, Kligman A.B. Some observation on dandruff. *J. Soc. Cosmetic Chemists*, 1967; 20:81-108.
- Sharma P P. 2008, *Cosmetics- Formulation, manufacturing and quality control*, 4<sup>th</sup> edition, Published by Vandana Publication (P) Ltd. Delhi-110088 Page no 323- 348.
- Croxall J D, Plosker G L. Sertaconazole A review of its use *Antimicrob Agent Chemother*, 2009; 69(3):339-359.
- Han SH, Hur MS, Kim MJ, Jung WH, Park M, Kim JH, Shin HJ, Choe YB, Ahn KJ, Lee YW. In vitro anti-malassezia activity of castaneacrenata shell and oil-soluble glycyrrhiza extracts. *Annals of Dermatology.* 2017; 29(3):321-326.
- Itankar P, Murkute AV. Evaluation of in vitro antidandruff activity of biotransformed material (extract) of nicotianatabacum leaves. *J.Natural Remedies.* 2015; 15(2):65-70.
- Naga Padma P, Anuradha K, Divya K. Comparison of potency of antifungal action of dandruff shampoos and different plant extracts. *International J. Medical Res &Health Sci.* 2015; 4(2):327-331.
- Al Badi K, Khan SA. Formulation, evaluation and comparison of the herbal shampoo with the commercial shampoos. *Beni-suef University J. Basic and Applied Sci.* 2014; 3(4):301-305.
- Mohamed HS, Farahat NH, Megallaa NG, Elhaleem MA. Nursing guidelines on hair dandruff symptoms for adult patients. *Life Science Journal.* 2014; 11(1s):323-333.
- <https://www.avenufive.edu/10-common-hair-problems/232323>.
- <https://www.allure.com/story/what-does-a-conditioner-do-why-should-you-use-it>
- <https://www.mayoclinic.org/diseases-conditions/hair-loss/symptoms-causes/syc-20372926>
- <https://www.femina.in/wellness/home-remedies/how-to-stop-hair-fall-and-tips-to-control-with-natural-home-remedies-60280.html>
- Nafisy AT. A Review of traditional medicine in Iran. *Isfahan: Isfahan University Publications*, 1989; 133.
- Abbiw DK. Useful plants of Ghana - West African use of wild and cultivated plants. *Intermediate Technology Publications and the Royal Botanic Gardens Kew*, 1990.
- Hadkar U.B. and Ravindera R.P., *Indian Journal of Pharmaceutical Education Research*, 2009; 43(2):187-191.