

Anatomical review of hair W.S.R. to hair cosmetics

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Abstract

Background: To study hair cosmetics hair preparations, it is very essential to have knowledge of hair. Presence of hair in odd place can make a negative effect, whereas hair on head is a part of overall attraction and beauty of a human being. So, people take a lot of care of hair to make an impact or appeal. The shaft and root of the hair both consist of three concentric layers of cells: Medulla, Cortex and cuticle of the hair. Hair grows in cycle three phase Anagen phase, Catagen phase and Telogen phase. Hair having many functions in the human body depends upon body part where it takes place. Damaged and splitting hair due to pollution, Baldness, alopecia, dandruff these are some ailment to the normal hair. To overcome these ailments and also for decorative or beautification processes various hair care preparation like Hair cleanser, hair tonic, Conditioner, Hair oils, Hair Colourant, Hair Remover and Shaving preparations are widely used.

Key Words: Hair, Hair Cosmetics, Hair Preparations

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Scalp and chin have highest rate of growth. The rate of growth of scalp hair is between 0.27 – 0.40 mm per day. The growth rate of axillary hair is nearly same. The growth rate for hair on body surface is about 0.2 mm per day. Through the daily variations of temperature have no effect on the growth rate but the study indicated higher growth rate of beard in summer than winter. Also there is one study report which indicated that the growth of scalp hair in women is faster than men. The growth rate of scalp hair is more in Young and adults and declines in old age. ² In the present study hair anatomy reviewed according to modern and Ayurvedic literature, and literature related to hair cosmetics about functioning and effect of hair cosmetic. Because of hair problems rising due to today's life style, need and demand of such products has increased over the years.

AIMS AND OBJECTIVES

1. To study understanding of the hair shaft structure and behaviour according to Ayurveda.
2. To study understanding of the hair shaft structure and behaviour according to modern science.
3. To study literature about hair cosmetics.
4. To study effect of hair cosmetics on hairs.

INTRODUCTION

Hair is one of the vital parts of the body and considered to be accessory structure of the integument along with sebaceous glands, sweat glands and nails. In adults, hair usually is most heavily distributed across the scalp, in the eyebrows, in the axillae, and around the external genitalia. Although the protection it offers is limited, hairs on the head guard the scalp from injury and the sun's rays. It also decreases heat loss from the scalp. Eyebrows and eyelashes protect from foreign particles, as does hair in the nostrils and in the external ear canal.¹ As a cosmetic purpose hair is an important part of our body. Hair on head is a part of overall attraction and beauty of human being. The rate of hair growth has been reported to be varying with sites.

HAIR ANATOMY

Hair is composed of columns of dead, keratinized epidermal cells bonded together by extracellular proteins. The shaft is the superficial portion of the hair, which projects above the surface of the skin. The root is the portion of hair of the hair deep to the shaft that penetrates into the dermis and sometimes into the subcutaneous layer. The shaft and root of the hair both consist of three concentric layers of cells: Medulla, Cortex and cuticle of the hair. The inner medulla, which may be lacking in thinner hair, is composed of two or three rows of irregularly shaped cells. The middle cortex forms the major part of the shaft and consists of elongated cells. The cuticle of the hair, the outermost layer, consists of single layer of thin, flat cells that are the most heavily keratinized. Surrounding the root of the hair is the hair follicle, which is made up of an external root sheath and internal root sheath, together referred to as an epithelial root sheath.³

A hair normally grows at the rate of approximately 1 cm per month, but each hair grows in cycles, each cycle being constituted by –

- The growth phase (Anagen)
- The transition phase (Catagen)
- The resting phase (Telogen)

The catagen phase in a hair cycle usually lasts 3 weeks, while the telogen phase lasts 3 months. The duration of the anagen phase in different hair follicles however, varies depending upon the site of the body. In the scalp hair the duration of anagen phase can be as long as 10 years. After completing the anagen phase, each hair follicle enters into the catagen phase which is followed by telogen phase. The old hair however, falls off only after the completion of the telogen phase and when the new hair has already started growing in its place.⁴

KESHA ACCORDING TO AYURVEDA

According to Acharya Charaka ingested food is digested to assimilable nutritional fluid

(Ahara Rasa) which further divides into two parts namely; Sara Bhaga (essential fluid) and the Kitta Bhaga (excretory matter/waste matter). The waste matter is responsible for the production and nutrition of so many things like sweat, urine, hair, etc. and among them are the hair follicles the hair of the head and beard, hair of the body, etc.⁵ According to Sushruta Kesha nutrition form the end part of Dhaman (Circulation), which are attached to the Romakoops.⁶

The concept of process of transformation of one Dhatu into subsequent Dhatu is called

Dhatu Poshana Naya. In Ayurveda there are seven Dhatu (tissue) in the body. Jataragni (Digestive power) is the main Agni that convert Ahar into Ahar Rasa (essence of food), which further converted into Seven Dhatu by the Dhatwagni and Bhutagni. Dhatu Poshan Naya is a type of

conversion comes under Kshir Dadhi Nyaya and Kedari kuliya Nyaya. But Acharya Chakrapani strongly discarded the Khale-Kapota Naya. So if one Dhatu is assessing as undernutrition then nutrition of former Dhatu is Necessary.⁷

FUNCTIONS OF HAIR⁸

Hair has several important functions

1. The hair on the head protect the scalp from ultraviolet light, cushion round the head, and insulate the skull.
2. Eyebrows protect the eye from small foreign particles and insects. Also it diverts sweat from eyes.
3. Vivrissae, the hairs, guarding the entrances to nostrils and external ear canals filter the air and help prevent the entry of small insects and foreign particles.
4. Body hair helps in evaporation and perspiration of draining of external water from the body.
5. Hair is also part of sensing function. As, to checkna root hair plexus of sensory nerves Surrounding the base of each hair follicle, one can feel the movement of the shaft of even a single hair; this sensitivity acts as an early warning system that may help to prevent injury.

Steps to keep Hair Healthy⁹

1. Wash the hair with mild shampoo which are reinforced by active substances.
2. After shampooing treat the hair with rising preparations and setting lotions in order to impart the gloss and firmness to it.
3. Groom the hair with hair conditioners in order to make it elastic and protect it from deterioration after frequent permanent waving.
4. Preserve the hair and its growth by constant attention, using hair lotion and hair treatment packs containing active substances.

HAIR CARE COSMETIC PREPARATIONS

To overcome ailments or other problems of hair and also for decorative or beautification purposes various hair care preparations are widely used. The need or demand of such products has increased over the years.

All the hair care products can be classified in the following way

1. **HAIR CLEANSER¹⁰**- Various shampoos like clear liquids, Liquid creams, solid creams or gels, anti-dandruff shampoos, oil shampoos, powders, dry shampoos etc.

Characteristics of good acceptable Shampoo: -

- It effectively removes dust or soil, excessive sebum or other fatty substances, loose corneal cells from the

hair and other residual substances of hair dressings or settings or other materials.

- It should effectively wash the hairs.
- It should produce a good amount of foam to satisfy the psychological requirements of the user.
- The shampoo should be easily removed by rinsing with water.
- It should leave the hair non-dry, soft, lustrous with good, manageability and minimum of fly away.
- It should impart a pleasant fragrance to the hair.
- It should not make the hand rough and chapped.
- It should not have any side effects or causes irritation to skin or eye.

2. **HAIR TONICS**¹¹—Preparations containing various substances like sulphur derivatives, vitamins etc.

Ideal hair tonic should have the following ingredients: -

- A counter irritant to improve supply of blood to the dermal papillae.
- Vitamins and sulphur containing amino acids for biosynthesis of keratin.
- Antiseptics for control of dandruff and seborrhoea.
- Optionally it can also contain conditioners.
- Should not damage scalp or hair.

Hair tonics have been made for dry scalps or for oily scalp. Those for oily scalps are designed to correct the oily condition and are alkaline. The dry scalps the preparations contain substances to supplement oily character of the scalp. The idea of using these substances is that either growth or structure and rigidity of the hair will benefit by using them on scalp and in contact with keratogenous zone or the tissue surrounding the hair papilla or germinal matrix.

3. CONDITIONERS¹²

Conditioners are used after shampooing the hair, to render the hair more lustrous, easy to comb and free from static electricity when dry. They are also used to improve damaged hair. Hair may be damaged by excessive use of bleaches and permanent waves. Conditioners are usually based on cationic detergents and fatty materials like lanolin or mineral oil.

4. HAIR OIL¹³

This is widely used by the people for nourishment and care of hair. Variety of hair oil are available in the market. Some

are pure oil like coconut oil etc. Others normally contain some important ingredients dissolved in oil.

5. HAIR DYES AND BLEACHES (hair colourants)¹⁴-

Various dyes and bleaching preparations. An ideal hair dye should have the following Characteristics

- It should not be toxic to the skin or hair and should not impair the natural gloss and texture of the hair.
- It should not be dermatitis sensitizer.
- The colour that it imparts to the hair must be stable to air, light, water and shampoo.
- Should be easy to apply.

These days **hair colorants may be classified into following categories**

- Temporary colorants
- Semi- permanent colorants
- Permanent colorants
- Lighteners or bleaches

6. HAIR GROOMING AIDS¹⁵

Various hair Grooming Aids

- Brilliantines and hair oil
- Hair setting lotions
- Hair Cream
- Hair lacquers and sprays

a. Brilliantines and Hair oil

These products are mainly based on wax and oils. Depending on the consistency they may be classified into the following products-

- Hard: Stick brilliantine
- Soft: Brilliantine
- Liquid: Hair oil, liquid brilliantine.

b. Hair Setting Lotions

For long time hair setting lotions are in use. These products can be gum based, resin based or can be purely alcohol based lotions.

c. Hair Creams

Hair creams can be either water-in -oil or oil-in - water type. Water-in -oil type creams have more holding capacity than the latter and provide better gloss to the hair.

d. Hair Lacquers or Sprays

Hair lacquers or sprays are used to hold the hair setting firmly, specially in women, in shape and control the loose ends without disturbing the good appearance.

7. HAIR REMOVERS¹⁶

Removal of superfluous hair has been in practice from ancient period, among various methods used nowadays for shaving, plucking with tweezers, tearing out with a wax preparation or by threading can be considered as mechanical and termed as epilatory methods. Removal by destroying the hair using chemical means is termed as depilatory methods. Other methods for hair removal

presently used, mainly in beauty salon, are electrolysis and diathermy.

Desirable characters of an ideal depilatory preparation are

- Selective in action
- Effective and rapid action in few minutes
- Non- toxic and non- allergic to the skin
- Odourless
- Easy to apply
- Stable
- Non staining to clothing

8. SHAVING PREPARATIONS¹⁷

These are widely used men's cosmetic products. Shaving preparations may be divided, basically, into two groups-

- a. Preparations used before shaving
- b. Preparations used after shaving

a. Preparations used before Shaving-

These preparations are used for softening the beard for wet shaving and also to produce rich foam to facilitate shaving by razor, safety blade or electric shaving.

These preparations can further be classified into two

- a. Preparation used for shaving with razor blade.
- b. Preparation used for electric shaving.

b. Preparations used after shaving

The after shaving preparations are basically applied to cool and refresh the skin, to overcome irritation on the skin, to neutralize the soreness, to disinfect or heal the skin damage or cut. They are used in the form of lotions, creams or powders.

DISCUSSION

Hairs can be found nearly all over the surface of the skin except over some specific sites like the sides and sole of the feet, the palm of the hands, the sides of the fingers and toes, the lips and portion of the external genitalia. There are about 50,00,000 hairs on the human body and 98 per cent of them are on the general body surface and about 1,00,000 to 1,20,000 are on head. Population density of normal adult scalp hair is reported to be between 225 hair cm² on average with variable range of 175 to 300 cm². The rate of hair growth has been reported varying with sites.¹⁸ The shaft and root of the hair both consist of three concentric layers of cells: Medulla, Cortex and cuticle of the hair and having three phases of growing. During the process of formation and development of hair, the successive role of other tissues can also be estimated; because, though its origin begins at the earliest for its appearance it takes much time. So the role of subsequent Dhatus (Tissue) like Asthi (Bone) and Majja (Bone marrow) can be well judged because hair is a Mala (By product) of Asthi Dhattu (Bony tissue) and Majja in subsequent tissue. Hair having many functions in the body.

There can be some ailment to the normal health of a hair and can cause trouble. There can be problem in pigmentation and thus changing the colour of the hair. Baldness or alopecia is one important problem. Dandruff is caused by skin infection, disease and microbial contamination. To overcome these problems and also for decorative or beautification processes various hair care preparation are widely used. Hair cleanser remove dust, soil, excessive sebum and loose corneal cells. Hair tonic improve blood supply to dermal papillae. Conditioner used for damaged hair. Hair oil nourishes and care of hair. Hair colorant having four categories. It should not be toxic and sensitive to skin. Tearing out with a wax preparation, threading and electrolysis and diathermy these methods presently used in beauty salon. Shaving preparations are of two type preparation used before shaving and preparation used after shaving.

CONCLUSION

- The Kitta Bhaga of Dhatu during Asthidhatuposhan is responsible for the production and nutrition of hair follicles the hair of the head and beard, hair of the body, etc
- Hair having many functions in the human body depends upon body part where it takes place.
- Damaged and splitting hair due to pollution, Baldness, alopecia, dandruff these are some ailment to the normal hair.
- To overcome these ailment and also for decorative or beautification processes various hair care preparation are widely used.

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