

The Chemistry of Baldness



Chemistry

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ABSTRACT

Hair give beauty to the human body, nowadays, hair loss or thinning, and hypertrichosis or hirsutism are common complaints in clinical dermatology, some persons are completely bald or overall haired. And also sometimes there are changes in hair structure or color and hair greying. The reason for hair loss can be many such as stress, hereditary reasons, hormonal changes, use of harsh chemicals, junk food, harsh weather conditions, sleep disorders, medications, and malnutrition. Proper care must be taken for hair fall in the earlier stages because if once the follicles have closed and the hair has fallen out nothing much can be done

Hair is an approximately cylindrical protein filament, lengthwise it has three parts; **Bulb, Root and Shaft.**

Bulb lies at the base in the dermis, **Root** is the hair lying below the skin surface and **Shaft** is the hair above the skin surface. It is believed to be a dead structure composed of cells which die after leaving the dermal papilla. It has keratinised structure composed of an outer cuticle the cortex where cells are held firmly together and an inner medulla where the cells are larger more loosely connected and partially separated by air spaces [Arase et al. 1991].

Hair is one of the defining characteristics of the mammalian class [Al-Reza et al. 2009]. The nonhuman mammals have fine, soft hair on their skin it is typically called fur; wool is the characteristically curly hair found on sheep and goats.

Each hair emerges from a follicle which lies in Dermis. All follicles are established before birth therefore all characteristics are genetically determined.

Hair is associated with sweat gland and sebaceous gland activity [Al-Reza et al. 2010]. The arrector pili muscle joins the wall of the follicle to the epidermis and is responsible for the erection of hair during cold weather or emotional stresses [Ambasta et al. 2004].

Some studies have revealed that hair follicles never increase, they remain constant, since birth [Jain et al. 2006]

Hair Loss; Hair loss can involves scarring of scalp tissue due to inflammation and tissue destruction or it may lack scarring. Hair loss as a result of scarring can occur from infections, either bacterial, fungal, that travel deep into the skin. Little hair growth can be hoped for if scarring is present.

The main causes of hair loss can be; Metabolic and hereditary causes, Side effects of certain drugs, Damage of pituitary gland, Excess formation of male hormones can be a cause of hair fall. Low thyroid function (hypothyroidism) can cause a thick oily scalp, with coarse sparse hair, or actual baldness, over active thyroid function (hyperthyroidism) results in sparse fine hairs. Inadequate calories and insufficient protein [Kim et al. 2002], Severe psychic stress, haemorrhage or shock, prolonged fever [Oliver 1970], Tinea capitis (fungal infection of the scalp) [Paus et al. 1991].

Crimping or hot water bath etc may lead to irreversible destruction of hair follicles [Price 1999], hair bleaching and colouring [Rathi et al. 1998], Certain Medicines used to treat arthritis, anabolic, steroids used by athletes and bodybuilders, Oral contraceptives (Progestins & Estrogens) [Souleles et al. 1998], beta-blocker medications occasionally cause hair loss.

Androgenetic alopecia (AGA) is male or female pattern hair loss, it is associated with aging (near about age of 50) and has negative psychological and social impact on patients (Schmitt, Ribeiro et al. 2012)

Method for preventing hair loss; Take balanced nutritious diet daily, Endocrine abnormalities like should be properly managed by treatment. Avoid tension, stress, and relax, Avoid pulling, crimping of hair. Use only branded artificial hair colour and dyes, Don't use hot combs or hot water bath for hair, avoid dryness or cracking of hair, Don't use harsh chemicals (certain shampoos) over scalp, dandruff must be taken care properly [Stough et al. 2001].

A number of treatments have been proposed for Androgenetic alopecia (AGA), lauric and myristic acid are the most commonly used botanicals for the treatment of AGA.

Future Hair Loss Treatments; New treatment methods such as hair follicle cloning and gene therapy can be used to cure inherited pattern baldness permanently. The cloned follicles can be individually injected directly into the scalp, eliminating surgery altogether.

Hairpieces and wigs which people are using nowadays are expensive and time-consuming ongoing maintenance and replacement, and there is a significant fear of detection. In the future, wigs and hairpieces will likely be constructed which will appear and feel even more genuine and be even less detectable. Attachment methods will continue to be very secure, but may also become easier and faster to release, reducing maintenance effort, and improving hygiene.

CONCLUSION Hair has cosmetic importance they are affected by use of harsh chemical and by using certain beauty techniques. Proper care must be taken to maintain their cosmetic value, and also care of hair fall must be taken in the earlier stages because if once the follicles have closed and the hair has fallen out nothing much can be done. Care should be taken while washing and massaging the scalp so as to remove oils, dead skin and other debris.

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