

# Hair Loss Management

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## INTRODUCTION

Nearly 95% of hair loss in men is caused by androgenetic alopecia. Major causes of hair loss are stress, pollution, lack of nutrition, illness, alcohol, smoking, and effluvium. For hair loss should we take oral drugs or apply topically on hair? It is a big question for all of us. Before discussion, we need to know the hair constituents: Human hair consists of approximately 65–95% protein. Besides cystine, human hair cuticle contains cysteic acid, proline, threonine, isoleucine, methionine, leucine, tyrosine, and phenylalanine in quite high proportion. The remaining constituents are water, lipid, pigment, and trace elements that are not free but bound with protein or fatty acids side chain. Consumed food products should contain protein, lipid, water, and trace elements. For direct impact on structure, growth and keeping hair shiny and healthy. Standard value proteins containing sulfur amino acids: Cysteine and methionine as precursor to keratin hair protein synthesis are basic elements of diet conditioning of hair building.

## DISCUSSION

Hair growth can be achieved by fighting hair loss with medications or by strengthening the hair roots with nutrients. Excess of Vitamins A and E and Omega 3 cause hair loss instead of hair growth. Administered together, Vitamin C can destroy Vitamin B12. Iron and calcium reduce the absorption of one another.<sup>[1]</sup> Hair growth influencing minerals: Zinc, iron, copper, selenium, silicon, magnesium, calcium. Protein intake should be 0.9 g/kg body mass per day. Hair lipids are fatty acid, phytosphingosine, ceramide, cholesterol, and cholesterol sulfate.

Low consumption of linoleic and linolenic acids (horny layer of epidermis) causes hair loss. Fats should constitute 25–35% energy value of the diet. Diet should contain complex carbohydrate with low glycemic index and load containing fiber. Highly processed foods are a source of simple sugar (indirect factor for causing hair loss), Carbohydrates should from 45% to 65% of the energy value of the diet and <10% energy should come from sucrose. Vitamin A deficiency may cause a decrease in cell cycle speed of cell generation and synthesis. Excess of Vitamin A can (from animal source) also be the cause of hair fall. Good source of carotenoids are coming from vegetables and fruits.<sup>[2]</sup> Vitamin B such as niacin (B3, pp Vitamin), biotin (B7, H Vitamin), and cobalamin (B12 Vitamin) is essential, Folates are also important for hair. Niacin influences water transformation of skin, causes angiectasis, detoxifies skin, and is necessary for keeping hair in proper state.<sup>[3]</sup> Biotin takes part in fat and protein metabolism, and its deficiency might lead to hair loss. Free form found in milk and vegetables. Bound form in liver, meat, egg yolk, yeast, and nuts. The custom of treating women complaining of hair loss in an indiscriminate manner with oral biotin is to be rejected, unless biotin deficiency. Hence, we should take careful patients' history, clinical examination, determination of serum biotin level, and exclusion of alternative factors responsible for hair loss.<sup>[4]</sup> Cobalamin (B12 vitamin) may have connection to excess hair loss in woman with anemia depression.<sup>[5]</sup> Folates take part producing red blood cells and hemoglobin, which transport oxygen to tissue building hair. Folate is responsible for "Stimulating of rebuilding of hair follicle cells, prevent hair graying and falling out, and regulating sebum glands functioning."<sup>[6]</sup> Ascorbic acid 2-phosphate promotes elongation of hair shafts through the

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secretion of insulin-like growth factor 1 from dermal papilla cells through phosphatidylinositol 3-kinase.<sup>[7]</sup> Ascorbic acid 2-phosphate stimulates the growth of dermal papilla cells and promotes the elongation of the hair shafts in isolated hair follicle in culture.<sup>[8]</sup> Ascorbic acid 2-phosphate induced earlier telogen to anagen as compared with vehicle-treated group.<sup>[9]</sup> The Vitamin D receptor, independent of Vitamin D, plays an important role in hair cycling, specifically anagen initiation. The role of Vitamin D in hair follicle cycling is not as well understood.<sup>[10]</sup> The degree of baldness does not appear to influence the serum Vitamin D levels. The high prevalence of baldness in older men does not explain sex differences in Vitamin D levels. Other novel hypotheses are required to help determine whether baldness serves any physiological purpose.<sup>[11]</sup> Low serum ferritin and Vitamin D2 are associated with hair loss in females with Telogen Effluvium and Female Pattern Hair Loss. Screening to establish these levels in case of hair loss and supplementing with them when they are deficient may be beneficial in the treatment of disease.<sup>[12]</sup> Minerals which influence hair growth are zinc, iron, copper, selenium, silicon, magnesium, and calcium. Zinc deficiency associated with hypothyroidism: An overlooked cause of severe alopecia. Hypothyroidism is a common and well-recognized cause of diffuse hair loss, zinc and other trace elements such as copper and selenium are required for the synthesis of thyroid hormones, and deficiency of these can result in hypothyroidism. Conversely, thyroid hormones are essential for the absorption of zinc, and hence, hypothyroidism can result in acquired zinc deficiency.<sup>[13]</sup> Currently, there is insufficient evidence to recommend universal screening for iron deficiency in patients with hair loss. In addition, there is insufficient evidence to recommend giving iron supplementation therapy to patients with hair loss and iron deficiency in absence of iron deficiency anemia.<sup>[14]</sup> Magnesium, taking part in protein transformation, is responsible for division, growth, and ripening process of cells, taking into consideration its part in immunological reactions, protecting and alleviating inflammation states which causes its deficiency to have direct or indirect contribution to hair fall.<sup>[15]</sup> Selenium is a component of at least 35 proteins, many of which are enzymes and with its deficiency in the body hair loss with pseudo albinism occurs.<sup>[16]</sup> Silicon is responsible for growth and shine of hair. Oral intake of choline stabilized orthosilicic acid had a positive effect on tensile strength including elasticity and break load and resulted in thicker hair.<sup>[17]</sup> Copper is crucial for the activation of key enzyme system specific to tissue formation and repair.<sup>[18]</sup> Its (copper) deficiency in diet might be the cause of a lowered number of sulfur bridges responsible for strength and elasticity of hair resulting in brittle, weak, curly hair with a tendency to early graying.<sup>[19]</sup> All hair loss patients do not suffer from high dihydrotestosterone (DHT), high androgens, or hormonal imbalance. Hair loss has become a multifactorial phenomenon such as; environmental hazards,

lifestyle irregularities with diseases like diabetes mellitus, hypertension, cardiovascular disease. The antihypertensive activity of minoxidil is due to its sulfate metabolite and minoxidil sulfate. In large measure, minoxidil (for topical application) acts by opening adenosine triphosphate-sensitive potassium-sensitive channels in vascular smooth muscle cells. The ensuing vasodilation is comparable to that observed with other known potassium channel openers. Finasteride inhibits the activity of Type II 5 alpha-reductase, an enzyme that converts the male hormone testosterone into a more potent form called dihydrotestosterone (DHT). DHT is believed to act on scalp hair follicles to render them inactive and incapable of producing full grown hair.

## CONCLUSION

Consumed food products should contain a balanced diet including protein, lipid, water, and trace elements. Oral nutritional supplementation is to be rejected unless specific nutritional deficiency and their significance for the complaint of hair loss in an individual has been demonstrated on the basis of a careful patients history, clinical examination, determination of serum levels, and exclusion of alternative factors responsible for hair loss. Recommended dietary allowance (RDAs) nutritional supplementation can be taken for personal imbalance diet taking.

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