Hair and Nutrition
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The quantity and quality of hair growth are associated with the nutritional state of an individual. Normal supply, uptake, and transport of proteins, calories, trace elements, and vitamins are of fundamental importance in tissues with a high biosynthetic activity such as the hair follicle. Because the hair shaft is composed almost entirely of protein, the protein component of diet is critical for production of normal healthy hair. The rate of mitosis is sensitive to the calorific value of diet, provided mainly by carbohydrates stored as glycogen in the outer root sheath of follicle. Finally, vitamins and trace metals are related to the biosynthetic and energetic metabolism of follicle. It appears that on a typical Western diet, the hair follicle should have no problem in producing an appropriate hair shaft. Nevertheless, in instances of protein and calorie malnutrition, deficiency of biotin, vitamins C, B12, niacin, essential fatty acids, iron, zinc, copper, and selenium, hair growth and pigmentation may be impaired. The nutritional defect may be due to a hereditary defect in absorption or metabolism or environmental. Response to adequate substitution is usually good. Our knowledge of the effects of nutritional deficiencies on hair derives from observations in rare inborn errors of metabolism, in undernutrition/protein-calorie malnutrition, and in specific deficiency disorders, as well as from supplementation studies in animals and humans. Since an important commercial interest lies in the nutritional value of various vitamin and amino acid supplements, a question that arises is whether increasing the content of an already adequate diet with specific amino acids, vitamins and/or trace elements may further promote hair growth and quality, particularly in the aging hair follicle, where a physiological deficit is hypothesized. Dietary supplements are traditionally used OCT products for treatment or prevention of hair loss. Typically, they are based on a combination of L-cystine and vitamins, usually of the B-complex group, including medicinal yeast, a rich natural source of B-complex vitamins, and pantothenic acid (CYP complex). The rationale for the use of L-cystine is based on the biochemistry of cystine metabolism, clinical observations in disorders of L-cystine metabolism and cystine deficiency, and results of animal and human studies. In early studies, it was found that enrichment of even what appeared to be a normal diet with sulfur-containing amino acids increased wool production in sheep. Eventually, studies on the effect of CYP-complex based dietary supplements have been published, showing improvements in the trichogram, in hair swelling as a criterion for hair quality, and in the tensile strength of the hair fibre. In a double-blind, placebo-controlled study in 30 otherwise healthy women suffering of telogen effluvium we demonstrated by means of epiluminiscence microscopy with digital image analysis that dietary supplement with CYP-complex increased the anagen hair rate within 6 months of treatment, while placebo did not.

Further Reading