Have a "Good Hair Day"

By Gene Bruno, MS, MHS

Having a *bad hair day*? If so, you're not alone. Many people are dissatisfied with the appearance of their hair. In some cases, this might be because they are experiencing hair loss, slow growing hair, dry, brittle, or otherwise poor quality hair, and prematurely graying hair. Although the use of external products, such as shampoos, conditioners and hair "tonics" of various sorts common approaches to these problems, the internal use of certain nutrients and other natural substances may do much to support the appearance of healthy and beautiful hair. Before discussing these nutrients/natural substances, let's first review some background information about hair, hair problems and hair loss.

Background
Hair is the fastest growing tissue in the human body: the average rate of growth is about one-half inch a month. Optimal hair growth occurs from age 15 to 30, slows down from age 40 to 50, and is progressively lost by about age 50. Most men lose hair to some degree by age 35 and are more likely to lose their hair than are women. On a healthy scalp, 90% to 95% of hair follicles are growing, less than 1% is declining, and 5% to 10% are resting. The prognosis for encouraging hair growth is favorable if treatment begins before the growth stops altogether.[1]

Alopecia
The term *alopecia* refers to the loss of hair. Androgenetic alopecia is a type of alopecia that results from the conversion of the hormone testosterone into dihydrotestosterone (DHT) by the enzyme 5-alpha-reductase. Genetics determines the age at which hair follicles begin producing DHT. This is the common cause of male-pattern baldness, as well as a cause of hair loss for some women.

Now let's examine the nutrients and natural substances which may have benefit for promoting healthy hair.

Vitamin A
This vitamin protects hair follicle cells from damage caused by free radicals.[2] Vitamin A deficiency causes dry hair, while taking large amounts (more than 50,000 international units [IU] per day) can cause hair loss. An appropriate dosage range is 5,000 to 25,000 IU per day.

Vitamin C
One of vitamin C's major functions is to help produce and maintain healthy collagen, the connective tissue type found within hair follicles. Vitamin C is also a strong antioxidant and protects both the cells found within follicles and cells in nearby blood vessels.[3] A daily dose of 100-200 mg of vitamin C is recommended for hair and skin care.

Vitamin E
Vitamin E helps to maintain the integrity of cell membranes of hair follicles. The vitamin provides physical stability to cell membranes

and acts as an antioxidant while promoting healthy skin and hair.[4] A daily dose of vitamin E should be within the therapeutic range of 50–400 IU. Vitamin E and selenium work together to prevent attacks on cell membranes by free radicals by reducing peroxide concentration in the cell.

Vitamins B1, B2, Niacin & Pantothenic acid
Reduced levels of thiamin (vitamin B1), riboflavin (vitamin B2), niacin, and pantothenic acid can contribute to the undernourishment of hair-follicle cells.[5] A dosage range of 25-50 mg daily is recommended

Folic acid
A decrease in folic acid may contribute to decreased hair-follicle cell division and growth. Folic acid is also essential for the maintenance of healthy methionine levels in the body. Signs of folic-acid deficiency include anemia, apathy, fatigue, and graying hair. A therapeutic dose of 400-800 mcg daily is recommended.[6]

Biotin
Biotin is required for a number of enzymatic reactions within the body, and is necessary for the proper metabolism of protein, fat, and carbohydrates.[7] Over time, poor metabolism of nutrients can contribute to undernourished hair follicle cells. Although rare, a biotin deficiency results in skin rashes and hair loss. A study conducted at Harvard University suggests that biotin is one of the most important nutrients for preserving hair strength, texture, and function.[8] The recommended dosage of d-biotin is 500-1000 mcg per day.

Calcium
A fraction of the body's calcium stimulates cell mediators that act on cell-membrane phospholipids in hair-follicle cells.[9] Most Americans fail to meet the recommended daily intake for calcium.[10] Advise patients to take magnesium with supplemental calcium to maintain healthy calcium levels in the body. Without extra magnesium to balance it, large doses of calcium may be harmful. The recommended dosage is 100-200 mg of calcium per day.

Iodine
Suboptimal thyroid functioning can lead to abnormal hair growth.[11] Because iodine supports proper thyroid functioning, 112-225 mcg of iodine (in the form of kelp) per day is the recommended dosage.

Zinc
Zinc is essential for DNA and RNA production, which, in turn, leads to normal follicle-cell division. Zinc is also responsible for helping to stabilize cell-membrane structures18 and assists in the breakdown and removal of superoxide radicals.[12] Zinc intakes, in most Americans and worldwide, are generally low. Topical applications of zinc have been shown to reduce the hair loss activity of 5-AR type II.[13] The recommended dosage is 15 mg of zinc (in the form of zinc amino acid chelate) per day.

Selenium
Selenium is also necessary for iodine metabolism.[14] Case studies have indicated that selenium deficiency can lead to cancer, heart disease, and poor hair growth.[15] Supplementation of 25-50 mcg of selenium per day is the recommended dosage.

Beta-sitosterol & Saw palmetto extract
Nineteen men were given one softgel containing 50 milligrams beta-sitosterol and 200 mg saw palmetto extract (standardized to 85% to 95% lipsterolic content) twice a day or a matching placebo softgel for an average of 4.6 months. On the basis of the investigative staff's assessment of change in the patients' scalp hair growth from baseline, treatment with the active study formula demonstrated 60% (6/10) subjects rated as "improved" at the final visit as compared to baseline. In contrast, only 11% (1/9) in the placebo group were rated as "improved."[16]

He Shou Wu
He Shou Wu *(Polygoni multiflori),* has shown recent promise as a hair and color restorative and is capable of inducing terminal hair to grow instead of vellus hair (the fine baby hair growth associated with use of Rogaine or minoxidil).[17]

Horsetail
Horsetail (*Equisetum arvense or E. hymale*) is an excellent natural source of cysteine and the minerals selenium and silica, which may

enhance hair growth.[18] James A. Duke, Ph.D., at Green Farmacy, in Fulton, Maryland, and a world-renowned botanist, recommends adding a teaspoon of dried horsetail to herbal teas as a natural approach to hair loss.[19]

Para-Aminobenzoic Acid

Changes in hair color and texture can be the result of nutritional deficiencies. Often, when the deficiencies are corrected, hair color and texture are restored. Historically, para-aminobenzoic acid (PABA) has been used to stimulate hair growth and reduce graying of hair that is associated with nutrient deficiency and/or stress.[20] The recommended dosage is 25-50 mg of PABA per day.

Choline and Inositol

The metabolites choline (in the form of choline bitarate) and inositol are both precursors for phospholipids. Phospholipids are important for healthy hair-cell follicle development.[21]

L-Methionine

L-Methionine, one of four sulfur-containing amino acids, supports hair strength by providing adequate amounts of sulfur to hair cells. Sulfur is required for healthy connective tissue formation. Hair requires sulfur for normal growth and appearance.[22]

L-Cysteine

L-Cysteine supports hair strength by providing adequate amounts of sulfur to hair cells.[23] Skin, nails, and hair are high in Lcysteine. There is evidence that high-sulfur proteins, such as Lcysteine, are missing in the hair of patients who are losing hair.[24] Supplementing the diet with L-cysteine increases the percentage of high-sulfur proteins in the hair.

L-Lysine

Compared to the diet eaten by Americans, the Asian diet is rich in vegetables and herbs. Male pattern baldness among Asians is uncommon and this may be the result of nutrient and herb intakes acting as enzyme inhibitors. L-lysine, the amino acid prevalent in vegetables and legumes, has been found to inhibit 5-alpha-reductase type II.[25]

Methylsulfonylmethane

Sulfur is present in abundance in the keratinized cells of hair.[26] Chemically, sulfur has the ability to form strong bonds that contribute to the strength of healthy hair.[27]

Methylsulfonylmethane (MSM) is a natural and highly absorbable source of sulfur necessary for the formation of keratin in nails, skin, and hair.

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