

[IMAGE]

Nutrition for Healthy Skin

Give Yourself an Inner Facial

By Dr. James Meschino

The skin is the largest organ in the body, weighing approximately 20 pounds. It is prone to various diseases, defects, infections and insults from chemical, physical and ultraviolet light sources. Specific dietary agents and certain supplements are known to enhance the health and appearance of the skin by providing protection against sun damage, improving immune function at the skin level, reducing changes linked to skin-cancer development and providing therapeutic agents that assist in the treatment of many skin conditions, such as psoriasis, eczema and acne.

Nutrition for Healthy Skin 1 - Copyright © Stock Photo / Register Mark Along with hair and nails, skin is the fastest growing and most superficial tissue in the body. As such, it has a high demand for nutrients in order to continuously replenish itself with rapidly developing immature skin cells from the layers below. Even a marginal deficiency of nutrients such as vitamin A, the carotenoids, vitamin D, vitamins B₁ and B₂, niacin, pantothenic acid, biotin, folic acid, vitamin B₁₂, vitamin E, vitamin C or essential fatty acids can result in impaired development of skin cells, resulting in skin that is less smooth, prone to lesions, less elastic and more likely to suffer accelerated aging.

As reported by R. Hoffman, medical director of the Hoffman Center for Holistic Medicine in Manhattan, an *inner facial* consisting of changing to a healthier diet, better elimination and supplementation with vital skin nutrients, including essential fatty acids, can result in dramatic improvements in skin appearance in three to four months. The evidence is now strong and consistent that maintaining the outer beauty of the skin and effectively treating damaged skin and other skin disorders requires a comprehensive strategy that *must* include intake of optimal levels of certain vitamins, minerals and essential fatty acids.

Topical Skin Nutrients

Before examining the relationship between dietary nutrients and skin health, it is important to address the value of incorporating certain nutrients into topical creams and lotions. Recently, there has been much

attention given to the use of lotions containing phytoestrogens. A review of this evidence indicates that the use of topically applied estrogen (as well as hormone replacement therapy) and the use of natural progesterone by postmenopausal women may improve the skin's texture and appearance to a significant degree. However, estrogen replacement has been shown to increase the risk of breast cancer and influence the risk of other health conditions, which must be factored in to the decision-making process.

In regards to the topical application of phytoestrogens (plant-based estrogens), studies reveal that the transdermal absorption of the soy isoflavones genistein and diadzein is possible from studies that used specific oils (e.g., olive oil) as a transdermal chaperone agent. It appears that with repeated use, these phytoestrogens are captured in the skin, where they may exert a positive effect on skin cell development and texture. At this point, it is too premature to make any definitive statements in this regard and thus, the topical application of phytoestrogens as an intervention for skin health should be regarded as experimental at this time.

Other nutrients, however, are well-established as topical agents that may be considered for use to protect the skin from free-radical damage and improve the health of the skin in various ways. This list includes the antioxidants vitamin C, vitamin E and selenium, as well as other health-promoting and protective nutrients such as zinc oxide, green tea extract, witch hazel, aloe vera and milk thistle, which have all demonstrated impressive outcomes in clinical and experimental studies when used as topical agents.

Nutritional Supplements for Healthy Skin

Oral ingestion of certain vitamins and minerals has been shown to be of proven value in the prevention and treatment of many skin conditions. It is a fundamental consideration in lifelong skin health and maintenance, and a cornerstone of skin anti-aging practices.

Premature aging of the skin, genetic damage to skin cells and underlying melanin pigment are known to result from free-radical damage, which most commonly occurs due to overexposure to ultraviolet light from solar radiation (sunlight). Free radicals generated from cigarette smoking and alcohol consumption can also damage the skin in a similar way.

Free-radical damage hastens the process of skin aging and wrinkling and creates mutations that are known to lead to the development of skin cancer (basal cell carcinoma, squamous cell carcinoma and melanoma). Presently, non-melanoma skin cancer is the most common malignancy in the United States; the estimated

lifetime risk of developing malignant melanoma in the U.S. rose from one in 250 in 1981 to one in 87 in 1996.

Common Skin Problems and Supplements That Help	
Skin Problem	Appropriate Supplement
Sun- and chemical-induced free-radical damage that causes premature aging of the skin, wrinkling, cancerous conditions, other forms of skin damage	Contains optimal levels of antioxidants to help protect your skin from the aging and damaging effects caused by the sun: ● Antioxidants vitamin C, vitamin E, beta-carotene, selenium and zinc intercept and neutralize free radicals and defend skin cells from these damaging effects. ● Antioxidants protect skin from ultraviolet light damage. ● Replenishes the skin's antioxidant nutrient supply.
Skin disorders such as dermatitis (skin inflammation problems), lack of smoothness, seborrhoea-like scaly lesions, irregular pigmentation	Contains B vitamins at sufficient doses to ensure the healthy development of skin cells: ● B-vitamin supplementation corrects these skin problems and successfully treats a wide range of dermatitis problems ● B vitamins help to improve the smoothness and texture of the skin. ● Niacin (vitamin B₃) supplementation helps prevent ultraviolet-light damage to the skin and prevent weakened skin immune function by increasing energy availability to skin cells, helping them repair any ultraviolet light damage before it becomes permanent.

Abnormal development of skin cells, sometimes producing thickened dry skin that is prone to infection	Contains vitamin A and vitamin D to assist in normal growth and development of skin cells: ● Vitamin D receptors present on skin cells require adequate vitamin D stimulation from within the body in order to develop normally. ● Vitamin A is involved in growth and repair of skin cells. ● Correct doses of vitamins A and D required to achieve maximum benefit without risk of toxicity.
Unhealthy skin, acne and other conditions	Provides the appropriate daily doses of zinc and selenium to enhance your skin's vitality and appearance: ● Zinc improves oil gland function, local skin hormone activation, wound healing, inflammation control within the skin and tissue regeneration of skin cells. ● Zinc supplementation is emerging as an important aspect of acne control and in the treatment of eczema and psoriasis. ● Selenium plays a key role in antioxidant protection and in the prevention and management of various skin conditions.

Avoiding overexposure to sunlight (and other known sources of free radicals), wearing protective clothing and using antioxidant-containing sunblock creams and lotions are prudent strategies to minimize risk of premature skin aging and skin cancer. Recent studies have indicated that the use of antioxidant supplements can further help to protect the skin from free-radical damage and age-related changes linked to premature wrinkling and cancerous mutations. A double-blind, placebo-controlled study in human subjects demonstrated that subjects taking vitamin C (2,000 mg per day) and vitamin E (1,000 IU) supplements had significantly less free-radical damage to their skin after UV-light exposure than did subjects not given the antioxidant supplement regime. They also showed significantly less sunburn reaction.

Further, it has been shown that free radicals (especially sun exposure) deplete the skin of its antioxidant defenses quite rapidly, further increasing the requirement for nutritional antioxidants to replenish these important cellular antioxidants. Other laboratory studies reveal that selenium, zinc and N-acetyl-cysteine

supplementation can also defend skin cells against free radicals from UV light. Intensive investigation in this area of study strongly suggests that the daily supplementation of vitamins A, C, E, beta-carotene, selenium and zinc, at levels above those typically consumed from food alone, provides the skin with additional and possibly essential antioxidant defenses to help slow skin aging; and lends important support to other skin-cancer prevention initiatives.

Vitamin A

Nutrition for Healthy Skin - Copyright © Stock Photo / Register Mark All epithelial cells (including skin cells) require vitamin A (which the body can make from beta-carotene if necessary) to achieve their full, mature development, and for the production of mucus and other secretions that keep these tissues moist and resistant to infection. In the absence of adequate vitamin A, epithelial tissue does not produce these secretions, but instead becomes covered with keratin, which is a dry, water-insoluble protein that transforms soft, moist skin into skin that is hard and dry, or keratinised. Vitamin A deficiency, in fact, produces a precancerous type of condition known as *metaplasia* in various epithelial cells, whereby affected cells appear grossly enlarged and highly irregular and abnormal upon microscopic examination.

At the same time, skin cells are particularly responsive to vitamin A supplementation for a number of conditions, and a topical form of vitamin A has been used with success in the treatment of acne vulgaris. Vitamin A supplementation has been shown to be beneficial in wound healing, as it stimulates the synthesis of collagen. As such, some physicians recommend short-term supplementation with 25,000-50,000 IU of vitamin A prior to and following surgery and dermatological procedures to enhance healing and to help ensure more complete healing of the skin and connective tissues.

The National Health and Nutrition Examination Survey II demonstrated that vitamin A intake is of concern across the U.S. population, with 50 percent of adult Americans consuming less than the RDA. For this reason, it is advisable to consider a daily supplement containing 2,000-3,000 IU of vitamin A and 10,000-15,000 IU of beta-carotene to help support skin health and appearance. Certain conditions may require higher doses for short periods of time, but long-term supplementation with higher doses of preformed vitamin A (beta-carotene is nontoxic by comparison) can result in vitamin A toxicity, which among other serious outcomes can cause severe skin dryness and peeling.

B Vitamins

Virtually all B vitamins are required at sufficient doses to ensure healthy development of skin cells. In fact, deficiencies in many B vitamins directly result in various types of skin conditions, skin diseases and alterations in the normal appearance of the skin. Even marginal deficiencies of B vitamins can produce chronic skin lesions that are not treatable with topical agents alone.

For instance, nasolabial seborrhoea (characterized by fissuring and redness at the corners of the eyes and mouth, among other symptoms) is known to result from marginal deficiencies in niacin, vitamin B₆ or vitamin B₂. Hyperpigmentation (color of skin changes first to red, then to brown) can result from niacin deficiency. Angular stomatitis (redness, cracking and flaking at the corners of the mouth) can result from a marginal deficiency of vitamin B₂, vitamin B₆, niacin or iron. Supplementation with appropriate doses of specific B vitamins can reverse these conditions if a B-vitamin deficiency is a contributing cause of the problem, as is often the case.

In addition to these findings, human studies reveal that folic acid and/or vitamin B₆ supplementation has been effective in treating acne vulgaris (which causes the appearance of whiteheads, blackheads and red pimples). B-complex vitamin supplementation has been used successfully in the treatment of eczema (atopic dermatitis) in conjunction with essential fatty acids and hydrochloric acid supplementation. Some patients with psoriasis respond favorably to supplementation with folic acid and/or vitamin B₁₂, and patients with seborrheic dermatitis have been shown to improve with supplementation of biotin (a B vitamin), folic acid and/or vitamin B₁₂. Investigation into this area demonstrates that suboptimal B-vitamin status can give rise to dermatitis (skin inflammation conditions), as well as lack of skin smoothness, seborrheic-type scaly lesions and/or irregular pigmentation.

Certain B vitamins (B₆, B₂) also participate as co-factors in the synthesis of prostaglandin hormones that, in part, determine the smoothness and texture of the skin. More recently, niacin (vitamin B₃) has been shown to help prevent skin damage or photo-aging induced by sunlight (ultraviolet light) by increasing the cellular energy required by skin cells to repair free-radical damage and preserve their immune function. These experiments suggest vitamin B₃ supplementation may be an important aspect of preventing cancerous changes to skin cells and is involved in slowing the process of photo-aging of the skin over our lifetime.

Unfortunately, data from the National Health and Nutrition Examination Survey II revealed that as a daily average across the U.S. population, 80 percent of Americans ingest less than the recommended daily allowance (RDA) of vitamin B₆, 45 percent ingest less than the RDA of vitamin B₁, 34 percent ingest less than the RDA of vitamin B₂ and vitamin B₁₂, and 33 percent ingest less than the RDA of vitamin B₃. Moreover, the RDA values were not designed to represent optimal intake levels, but rather as levels of intake to guard against overt deficiency states. Thus, the RDAs are by no means the desired level of intake to maximize health and guard against degenerative and age-related diseases.

By all accounts, the daily use of a B-50 complex vitamin may be considered an important strategy to enhance and maintain the healthy appearance of the skin, aid in the treatment of various skin conditions, prevent the development of B-vitamin deficiency states that produce skin lesions and diseases, and help combat the underlying metabolic processes associated with photo-aging of the skin and skin cancer development.

Vitamin D

Nutrition for Healthy Skin - Copyright © Stock Photo / Register Mark In the case of vitamin D, it has recently been discovered that most skin cells have vitamin D receptors on their surface. Vitamin D is well-known for its positive effects on cellular differentiation (promoting the full maturation of epithelial cells), slowing the rate of epithelial cell division and for its tumor suppressant effects on epithelial cells that express vitamin D receptors. Experimental studies indicate that vitamin D (1,25 dihydroxy vitamin D) can inhibit the growth of some types of melanomas by inducing apoptosis (programmed cell death of cancer cells).

Generally speaking, cells that contain vitamin D receptors are able to produce their own 1,25 dihydroxy vitamin D (the most potent form of vitamin D) from the 25-hydroxy vitamin D, which is made in the liver (25-hydroxy vitamin D is made from the vitamin D synthesized under the skin upon sunlight exposure and the vitamin D consumed from food and supplements). Individuals living in more northerly areas of North America tend to have significantly lower levels of vitamin D in their bloodstream due to insufficient intensity of year-round direct-sunlight exposure to the skin. Thus, vitamin D supplementation is considered to more crucial for North American individuals living above the 40th degree latitude.

Therapeutically, vitamin D supplementation has been shown to be helpful in the treatment of psoriasis. The mechanism of action is thought to involve the slowing of skin cell division, which is otherwise excessive in psoriatic cases. For general health-promotion purposes and to enhance the vitamin D availability to skin cells, 400 IU per day of vitamin D supplementation is regarded as safe and effective. This amount is easily obtained from a respectable multivitamin formula.

Zinc and Selenium

The minerals zinc and selenium are also emerging as vital nutrients for skin health and appearance. Zinc is necessary for oil gland function, local skin hormone activation, wound healing, skin inflammation control and regeneration of skin cells. Zinc supplementation has been used with success in the treatment of many cases of acne and as part of the nutritional treatment for psoriasis and eczema. Studies indicate that most individuals consume only 8-9 mg per day of zinc from dietary sources, whereas the RDA for zinc is set at 15 mg for adults.

Selenium helps to provide antioxidant protection as part of the glutathione peroxidase enzyme. Selenium modulates the synthesis of prostaglandin hormones, which affect the smoothness and texture of the skin, and affects immune system function. Low blood levels of selenium have been associated with both eczema and psoriasis in human studies.

Are You Getting Enough Nutritional Skin Support?

The skin is a dynamic, highly proliferative organ that has an inherent need for specific vitamin and minerals to support its structure, function and development. Exposure of the skin to both internal and external sources of free radicals appears to create a demand for appropriate nutritional and topical antioxidant support to defend against photo-aging and mutations linked to cancer development. In addition, scientific investigation reveals that certain vitamins and minerals play a vital role in the prevention and management of many skin conditions and diseases, and affect other aspects of skin cell maturation that determine the texture, moisture and smoothness of the skin. Although various topical skin lotions and treatments provide effective anti-aging and therapeutic benefits, the addition of a high-potency multivitamin/mineral supplement to your skin care program is emerging as an invaluable intervention to complement topical and cosmetic practices. (See **Table** for a detailed account of desirable levels of nutrients provided by an appropriate multivitamin/mineral formula, and talk to your doctor to learn more.)

A HIGH-POTENCY MULTIVITAMIN/MINERAL THAT PROMOTES SKIN HEALTH

Vitamin/Mineral	Form	Amount
Vitamin A	Retinyl palmitate	2,000-3,000 IU
Beta Carotene	N/A	10,000-20,000 IU
Vitamin C	Ascorbic acid	500-1,000 mg
Vitamin D	Cholecalciferol	400 IU
Vitamin E	D-alpha tocopheryl succinate	200-400 IU
Thiamin	Thiamine mononitrate	50 mg
Riboflavin	N/A	50 mg
Niacin	Niacinamide	50 mg
Vitamin B ₆	Pyridoxine hydrochloride	50 mg
Folic Acid	N/A	400 mcg
Vitamin B ₁₂	Cyanocobalmin	50 mcg
Biotin	D-Biotin	300 mcg
Pantothenic Acid	Calcium pantothenate	50 mg
Calcium	Calcium carbonate, Calcium citrate	500 mg
Iron	Ferrous fumarate	6 mg

Magnesium	Magnesium oxide	200 mg
Zinc	Zinc citrate	15 mg
Selenium	Selenium HVP/HAP chelate	100-200 mcg
Copper	Copper gluconate	2 mg
Manganese	Manganese gluconate	5 mg
Chromium	Chromium amino acid chelate	50 mcg
Molybdenum	Molybdenum citrate	50 mcg
Citrus Bioflavonoids	N/A	50 mg
Lutein	N/A	6 mg
Lycopene	N/A	6 mg

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