Dynamic Chiropractic

VITAMINS / SUPPLEMENTS

Vitamin Supplements for Healthy Skin, Part 2

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Skin Cell Maturation and the Role of Vitamins

The normal growth and development of skin cells is also dependent upon the influence of bioactive agents that promote epithelial cell maturation and differentiation to fully developed adult cells. The transformation process of immature-looking cells to fully developed adult skin cells depends largely upon nutritional status of vitamin A, beta-carotene and vitamin D.

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, a dry, water-insoluble protein which transforms skin that is soft and moist 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.[30-31] 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.[32-33]

As was true for the average daily consumption of many B vitamins, the National Health and Nutrition Examination Survey II demonstrated that vitamin A intake across the U.S. population is also of concern, with 50 percent of adult Americans consuming less than the RDA.[29] 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.[25,31]

In the case of vitamin D, it has recently been discovered that most skin cells have vitamin D receptors on their surface.[34] 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.[6]

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.[35] 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 nutritional status 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 acne cases and as part of the nutritional treatment for psoriasis and eczema.[26,36-37] 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.[38]

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.[36] Low blood levels of selenium have been associated with both eczema and psoriasis in human studies.[26]

Recommend Nutritional and Topical Skin Support to Patients

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 patients' skin care program is emerging as an invaluable intervention to complement topical and cosmetic practices.

The scientific reality is that in the presence of suboptimal intake of vitamins and minerals (which is prevalent in our society), it is not possible for patients to achieve the maximum anti-aging and

therapeutic benefits provided by other skin care practices or procedures. The available evidence indicates that it is prudent to incorporate the use of a high-potency multivitamin/mineral into a daily program dealing with general skin care health, appearance and anti-aging. Fortunately, in today's marketplace, it is possible to find all of the essential vitamins and minerals, at optimal doses, formulated into a single high-potency product. (See Table 2 above for a detailed account of desirable levels of nutrients provided by an appropriate multivitamin/mineral formula.)

TABLE 2: CHARACTERISTICS OF A HIGH-POTENCY MULTIVITAMIN/MINERAL SUPPLEMENT 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 B6	Pyridoxine hydrochloride	50 mg
Folic Acid	N/A	400 mcg
Vitamin B12	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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