Skin endocrinology and nutrition

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Dear Colleagues,

Vitamins and other food ingredients are considered to be essential for the promotion of human health and play an important role in the prevention of medically relevant and lifestyle-related diseases. The field is undoubtedly trendy but the major challenge of science is—uninfluenced from common beliefs—to determine the possibly multiple factors associated with the causes of these diseases, to develop methods of detecting changes of the homeostatic stage and to establish diagnostic approaches which can be used in future prevention studies of hormones and food ingredients.

This issue of *Dermato-Endocrinology* summarizes the work presented at the workshop “Endocrinology, Nutrition and Skin” during the 17th Congress of the European Academy of Dermatology and Venereology, October 17–20, 2008 in Paris, France and is dedicated to examples of endocrine and nutrition factors which may influence skin health. The skin itself possesses the capacity to use food ingredients to generate several hormones and substances with hormone-like activity. These substances appear to act through paracrine, autocrine, intracrine and endocrine mechanisms to fulfill their pleiotropic effects. Moreover, the skin can metabolize hormones and produce derivatives with potential systemic activity. This novel concept of the role of the skin and its hormones as important players in general homeostasis and human disorders leads to the expectation that the detection of the pharmacological and therapeutic function of hormone mediators, their receptors and antagonists may not be far ahead. The latter idea has already been realized for corticosteroids, androgens, estrogens, topical vitamin D analogues and retinoids which today have an established place in clinical dermatology.

Interestingly, cardiovascular diseases due to atherosclerosis, being the commonest cause of mortality and morbidity in the Western world, are directly related to disorders of lipid metabolism, diabetes mellitus, and insulin resistance. Disorders of thyroid function and porphyrin metabolism occur less frequently but may cause life-threatening situations if unrecognized. All these, at least partially, endocrinological disorders are associated with characteristic dermatoses, which should permit early diagnosis and meaningful intervention.

A major long-known example of a skin-released and health relevant endocrine factor is vitamin D. Approximately 90% of all vitamin D needed by the human body has to be formed in the skin through the action of UV radiation. On the other hand, solar UV radiation represents the most important environmental risk factor for the development of non-melanoma skin cancer. Therefore, scientifically evaluated behavioural rules may solve the dilemma of the association of vitamin D with and bone, autoimmune, infectious, and cardiovascular diseases, hypertension and internal cancers (insufficiency/deficiency) parallelly with the induction of premature skin aging and skin cancer (extensive UV exposure).

Nutrition is also an important parameter for skin health. Indeed, nutritional deficiency is associated with skin and appendage modifications, while a specific diet can affect skin conditions positively or negatively. Anorexia nervosa represents an important model of the role of nutrition on skin health. This condition is a significant cause of morbidity and mortality among adolescent females and young women and is associated with severe medical and psychological consequences, including death, osteoporosis, growth delay, and developmental delay. Skin signs, such as xerosis, lanugo-like body hair, telogen effluvium, carotenoderma, acne, hyperpigmentation, seborrheic dermatitis, acrocyanosis, perniosis, petechiae, livedo reticularis, interdigital intertrigo, paronychia, acquired striae distensae, acral coldness are almost always detectable in severe anorexia nervosa and awareness of them may help in its early diagnosis.

Recently, the concept of nutritional supplementation has emerged as a new opportunity in the daily practice of dermatology as well as a complementary approach to topical cosmetics in the field of beauty. Specific strains of probiotic lactic acid bacteria have been shown to beneficially influence the composition and/or metabolic activity of the endogenous microbiota and some of these strains have been shown to inhibit the growth of a wide range of enteropathogens. Beyond their capacity to influence positively the composition of the intestinal microbiota, some probiotic bacteria can modulate the immune system both at the local and systemic levels thereby improving mechanisms of immune defence and/or downregulate immune disorders such as allergies or intestinal inflammation. Further, it is likely that probiotic supplementation may be useful in the management of atopic dermatitis and may protect the immune system of the skin from UV radiation.

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