

Nutritional Influences on Illness

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Nutritional Influences on Acne Vulgaris

Dietary Factors

Terribly common, but poorly understood, acne vulgaris seems to be a disease of civilization. For example, while 79% to 95% of the adolescent population in Westernized societies suffers from the disorder, a survey of 1200 Kitavan Islanders of Papua, New Guinea aged 15 to 25 years failed to find a single case of acne. Moreover, it is unlikely that genetic resistance to acne entirely explains its absence in this population, as other Pacific Islanders with similar ethnic backgrounds but who live in more Westernized settings have considerably higher acne incidence rates. The Kitavan diet is composed of minimally processed plant and animal foods and is virtually devoid of typical Western carbohydrates that yield high glycemic loads.¹

High-glycemic-load carbohydrates provoke hyperinsulinemia, and hyperinsulinemia initiates a hormonal cascade that favors unregulated tissue growth.¹ One mechanism by which it may provoke acne is through its effect on sebum, a secretion that is essential to acne development.² Fats and carbohydrates not only cause a moderate increase in sebum in normals, but they cause a marked increase in acne patients.³ Sebum production is also stimulated by androgens; since hyperinsulinemia has a well-established androgenic effect, it may thus promote acne by increasing sebum production.¹

Further support for the hyperinsulinemia hypothesis comes from a randomized controlled trial in which male acne patients aged 15 to 25 years received either a low-glycemic-load diet (25% energy from protein; 45% from low-glycemic-index carbohydrates) or a control diet that emphasized carbohydrate-dense foods without reference to the glycemic index. After 12 weeks, total lesion counts had decreased significantly more in the low-glycemic-load group than in the control group.⁴

Nutritional Factors

Vitamins

Vitamin A and Vitamin E

Without doubt, the most clinical interest in recent years has been generated by work with vitamin A and its derivatives. Both plasma/serum and skin vitamin A levels may be lower in acne patients than in normals.^{5,6} Vitamin E plasma levels also appear to be decreased.⁵ Moreover, there appears to be a strong relationship between decreased plasma vitamin A levels and increased severity of acne, and patients with severe acne may have significantly lower plasma concentrations of vitamins A and E than those with a lower grade of acne or age-matched healthy controls.⁵

Ayres and Mihan have reported success with over 100 patients who received 100,000 IU of vitamin A with 800 IU of vitamin E daily. Most responded within weeks, and maintenance control was obtained with lower doses. Serious toxicity of vitamin A, even at these high dosages, was rare, and early signs and symptoms of adverse reactions could be readily noted by the physician.⁷ (Because of hepatic storage, long-term doses of vitamin A higher than about 10,000 IU daily should be avoided.)

While the administration of vitamin A has not been popular, the use of retinoids, which are vitamin A

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derivatives, has become a backbone of acne treatment. Retinoids prevent comedone formation by normalizing desquamation of the follicular epithelium.⁸ Both tretinoin (retinoic acid; vitamin A acid) and similar retinoids, available by prescription as gels or creams for topical application, have been repeatedly shown to be effective in double-blind studies.⁸

Isotretinoin (13-cis-retinoic acid), a naturally occurring derivative of vitamin A, which is available by prescription for oral use, raises epidermal retinol levels⁹ and has also been found to be effective in double-blind studies.⁸ However, because of its substantial toxicity, its use is restricted to cases of severe, recalcitrant cystic acne.⁸ Unresolved is the question of how the combination of large doses of vitamin A with vitamin E compares to isotretinoin in regard to both efficacy and toxicity.

Vitamin B Complex

Several of the B vitamins may have efficacy in treating acne. Early data suggests that folic acid by mouth,¹⁰ or pantothenic acid given simultaneously both orally and topically,¹¹ may provide some benefit. Early work also suggests that vitamin B6, found to be effective in treating premenstrual syndrome, may also benefit women with

premenstrual acne flares when 50 mg is taken daily for one week prior to and during menses.¹² Occasionally, however, *stopping* supplementation with either vitamin B6 or vitamin B12 may actually improve an acneiform eruption, particularly in women.¹³ (These lesions consist of loosely disseminated small papules or papulopustules on the face and the upper parts of the back and chest spreading to the upper arm.)

The strongest evidence, however, is for niacin in the form of nicotinamide (niacinamide). There have been numerous reports over the past half-century suggesting that nicotinamide is beneficial in a variety of inflammatory skin disorders,¹⁴ and a number of mechanisms has been proposed to explain its efficacy.¹⁵ Moreover, its efficacy when applied as a topical gel in acne has been confirmed by a double-blind study.¹⁶

Minerals

Selenium Deficiency

Selenium may be low both in whole blood and plasma.¹⁷ Results of an open trial suggest that selenium supplementation – at least when combined with vitamin E – may be effective, especially for male patients with severe pustular acne and low levels of erythrocyte glutathione peroxidase (a selenium-containing enzyme).¹⁸

Zinc Deficiency

Acne patients – especially if the acne is severe – may be deficient in zinc.¹⁹ Zinc has an anti-inflammatory effect on cutaneous lesions; this appears to be due to inhibition of polymorphonuclear leukocyte chemotaxis induced by reduced granulocyte zinc levels.²⁰ While not all studies have shown positive results, the results of several double-blind studies have suggested that supplementation with effervescent zinc sulfate (which provides zinc as zinc citrate and zinc tartrate)²¹ may be effective, especially in regard to treating inflammation and pustules.²²

Combined Supplementation

Nicomide (nicotinamide 750 mg, zinc 25 mg, copper 1.5 mg, and folic acid 500 mcg) was tested in an open-label prospective cohort study of 198 patients, most of whom considered their condition to be of at least moderate severity. After four weeks, the number of patients who reported improvement was significantly greater than those who reported either no change or worsening, and this number grew through the eight weeks of treatment. Moreover, among the 26% of patients who were concomitantly on oral antibiotics, the statistics were similar, suggesting that the antibiotics failed to add to Nicomide's efficacy.²³

Dr. Werbach cautions that the nutritional treatment of illness should be supervised by physicians or practitioners whose training prepares them to recognize serious illness and to integrate nutritional interventions safely into the treatment plan.

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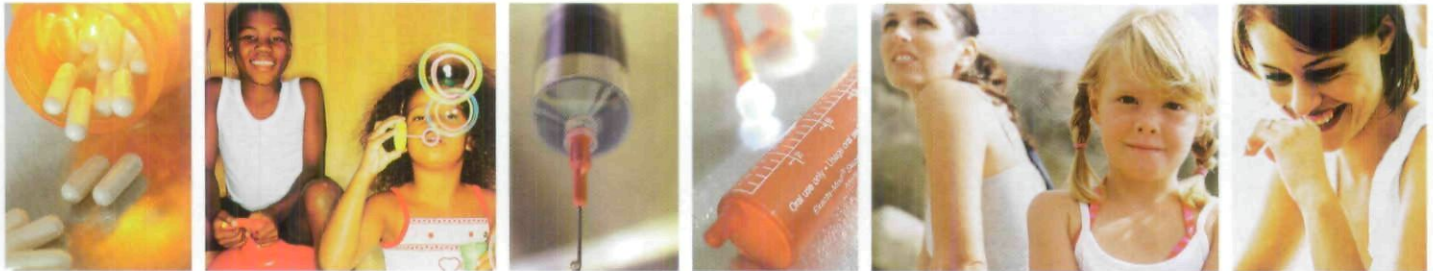
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