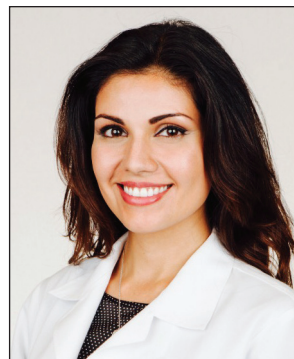


# Influence of Diet in Acne Vulgaris and Atopic Dermatitis

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*Diet has been considered as an influence in dermatology for several years. Unfortunately, although correlation has been breached, causation is yet to be determined. Over the last couple years, a few reviews of the literature have been published regarding the influence of diet in acne vulgaris and atopic dermatitis. This article reviews some dietary restrictions and supplements that may have beneficial effects in managing patients with acne vulgaris and atopic dermatitis.*

*Cutis.* 2016;98:E28-E29.

When I am in clinic, I often get at least 3 to 4 inquiries each day from patients about the necessity for dietary restrictions or alterations as well as the benefits of these changes in limiting their dermatological disease processes. I usually am restricted in my response because the research rarely indicates benefits of one diet versus another; however, this discussion has recently become a heavily researched area as patients have come to value natural nonpharmaceutical approaches to their holistic care. In this article, a few dietary restrictions and supplements are reviewed that may have a beneficial effect in managing patients with acne vulgaris and atopic dermatitis.

## Acne Vulgaris

In 1969 Fulton et al<sup>1</sup> conducted one of the first few trials on acne and diet management. In this crossover, patient-blinded, interventional study, patients were divided into 2 subgroups

(N=65): 1 adolescent patient with moderate acne was compared to 1 male prisoner given a chocolate bar for 4 weeks or a control bar with equivalent caloric index. The results indicated no change in acne vulgaris lesions based on either intervention; however, there were obvious deficiencies in the study including small sample size, inappropriate grouping of an adolescent patient versus a prisoner, and limited study period.<sup>1</sup>

Since then, multiple studies have been conducted with parallel participants, large sample sizes, and at least a 12-week study period. In 2005, Adebamowo et al<sup>2</sup> studied 47,355 women using a validated food frequency questionnaire that determined the amount of dairy consumed, specifically skim milk. The study showed a positive link between increased dairy consumption and acne formation; however, again due to the retrospective analysis and recall bias, it is difficult to determine if a link can truly be noted between acne and dairy in this study.<sup>2</sup>

More recently, LaRosa et al<sup>3</sup> conducted a study that included 225 participants aged 14 to 19 years. Excluding participants with lactose intolerance and current use of oral contraceptives and isotretinoin, the study placed 120 participants in the test group versus 105 participants in the control group. The study was conducted using 3 telephone interviews and a 24-hour diet recall technique. The results supported a link between acne and skim milk consumption. Again, although the studied relied on participant self-reports of diet and followed a case-control design, a possible association was suspected but not validated.<sup>3</sup> A longitudinal, questionnaire-based population study performed by Ulvestad et al<sup>4</sup> included 2489 patients. This study further evaluated recall of dairy product consumption at 15 to 16 years of age and then 3 years later acne severity was self-assessed and reported at 18 to 19 years of age. Overall, this evaluation indicated that a high intake

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The author reports no conflict of interest.  
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of dairy products and acne in adolescence have been positively associated. However, it was another retrospective study with recall bias.<sup>4</sup> In 2009 Melnick and Schmitz<sup>5</sup> concluded that milk causes the body to elevate both insulin and insulinlike growth factor 1 levels. In another study by Melnick<sup>6</sup> in 2011, a definitive link between increased insulin and insulinlike growth factor 1 signaling in promoting comedogenesis was reported. Given the few studies that show the potential link between dairy products and acne, this dairy-free diet can be considered as a diet recommendation for acne patients.

### Atopic Dermatitis

A Cochrane review conducted in 2012 regarding dietary supplements as a treatment of atopic dermatitis evaluated randomized controlled trials (N=596). Supplementation with vitamin D, fish oil, olive oil, zinc sulfate, selenium, vitamin E, pyridoxine, sea buckthorn seed oil, hempseed oil, sunflower oil (linoleic acid), and docosahexaenoic acid were evaluated among all the studies reviewed for atopic dermatitis.<sup>7</sup> Bronsnick et al<sup>8</sup> conducted a review of evidence supporting vitamin supplementation and atopic dermatitis, and for the most part determined that the studies had insufficient evidence. The only positive correlation was noted with prebiotics and probiotics in another Cochrane review in 2013, which evaluated 4 studies with 1428 infants showing prebiotic supplementation reduced atopic dermatitis.<sup>9</sup> In 2014 Panduru et al<sup>10</sup> evaluated 16 studies in a meta-analysis that showed how probiotics were possibly beneficial in both general and high-risk atopic populations. Specifically, a subgroup analysis showed that *Lactobacillus* and *Lactobacillus* with *Bifidobacterium* also can be protective against atopic dermatitis.<sup>10</sup> Lastly, diet avoidance in pregnancy or during lactation in infants up to 18 months of age did not have any effect on improving the infant's atopic dermatitis based on a 2012 Cochrane review that included 952 participants.<sup>11</sup>

### Conclusion

Overall, there are some benefits to dietary restrictions and supplementation as indicated by the studies reviewed here; however, the extent to which these changes contribute to disease manifestation has only been linked, not definitively proven. Randomized controlled trials with large sample sizes, double-blind studies, and appropriately controlled studies

with comparative patient populations are difficult to obtain, as diet cannot be completely restrictive for every patient. Patients should be provided with the latest data supporting a possible link between dairy consumption and acne production as well as prebiotics or probiotics during pregnancy and at infancy to reduce the risk for atopic dermatitis with the caveat of association. That said, future studies might prove that dietary and environmental alterations may prevent disease progression or appearance far more than previously assumed.

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