Vitamin and herbal supplements for the treatment of atopic dermatitis

Introduction

The National Eczema Association reports that up to 10% of adult Americans suffer from atopic dermatitis. At this time there is no definitively known cause or cure for atopic dermatitis. Apart from chronic itching and inflammation, eczema patients often report skin pain, sleep disturbances, and mental health struggles that severely impact quality of life. Symptom management consists of prescription corticosteroid creams and trigger avoidance. Prescription corticosteroids such as clobetasol have been linked to side effects including thinning of the skin, increased susceptibility to infection or worsening of existing infection, permanent development of stretch marks, rosacea, excessive hair growth, and in very rare cases may lead to development of Cushing's syndrome. Many patients hesitate to utilize topical corticosteroids out of concern for these potential side effects.

Vitamin D Supplementation and Eczema

UVB phototherapy has been established for several years as an effective therapy [15] for psoriasis, a skin condition similar to eczema. UVB, ultraviolet B, rays are present in sunlight. When UVB rays penetrate the skin, they collide with cholesterol molecules in skin cells which provides the cellular energy for vitamin D synthesis to occur. Vitamin D is primarily synthesized through exposure to sunlight or through ingestion of dietary supplements as dietary sources are limited to several foods including some fishes, beef liver, and eggs.

Vitamin D has a number of roles within the body including maintaining bone health & cardiovascular health, regulating blood sugar levels, neural function, and managing mood. Vitamin D is also known to participate in immune function and skin barrier regulation.

Recent small scale studies have found a link between low levels of vitamin D and an increased incidence of dermatitis. These studies have found that higher rates of allergic disease have been documented in areas farther from the equator where vitamin D deficiencies are more common. Two similar studies conducted in Boston, MA [16] and Mongolia [4] observed the effects of oral vitamin D supplementation on prevalence of dermatitis symptoms in children who had been previously diagnosed with eczema. In the Mongolian study, oral supplementation with vitamin D had a clinically and statistically significant improvement in Eczema Area and Severity Index (EASI) when compared to placebo. No adverse effects were observed in either study. An additional study compared the EASI of Norwegian children who were sent to a subtropical location for 4 weeks with Norwegian children who stayed in subfreezing temperatures. This study found that the children who had been exposed to tropical environments had a marked improvement in EASI over their arctic counterparts [14]. Results in adults have been mixed thus far, with several studies indicating similar results to studies in children and one study finding no statistically significant improvement in EASI in their test population [14].

In individuals with low serum vitamin D levels researchers have observed an increased prevalence of both eczema [9] and depression. Researchers are unsure if low serum vitamin D levels are a cause or a symptom of these conditions.

According to the NIH, nearly 25% of Americans are vitamin D deficient. Vitamin D deficiency is more common in individuals who receive little sun exposure due to lifestyle or environmental factors, individuals with darker skin, obese individuals, and older individuals. It is worth noting that UVB rays are not able to pass through windows and are inhibited by clouds, sunscreen, smog and fabric which may lead to insufficient exposure for vitamin D synthesis.

Vitamin D is a fat-soluble vitamin. The NIH recommends 15mcg for most adults. Though few foods contain naturally occurring vitamin D, US dairy products are often fortified with vitamin D. Vitamin D from UVB light is regulated by skin cells and is impossible to get too much of. Supplemental vitamin D exceeding 1,000mcg may cause toxicity symptoms including nausea, vomiting, confusion, pain, and kidney issues. These symptoms can be alleviated by discontinuing use of the supplemental vitamin product.

Embody's Eczema Gummy contains the daily recommended dose of vitamin D3, 15mcg.

Methylsulfonylmethane and Dermatitis

Methylsulfonylmethane (MSM) is a naturally occurring sulfur derivative found in plants, animals, and humans with a number of uses within the body. The most popular application of MSM supplements are for their use as an anti-inflammatory to reduce arthritis pain. MSM has also been observed to reduce oxidative stress through inhibition of mitochondrial activity [3].

While MSM has been well documented for its anti-inflammatory benefits when it comes to pain and oxidative stress, research is still in early stages to determine MSM's ability to reduce inflammation in the skin.

Despite being early in the process, several small scale studies have shown promising results. One study observed that supplementation with MSM reduced symptoms of seasonal allergies in otherwise healthy adult participants [1]. Another recorded statistically significant improvement in the symptoms of stage I-III rosacea when treated with topical MSM. In particular, the study notes, "improvement of skin redness, papules, itching, hydration, and skin color occurred." [2] Finally, a case study of an individual with ichthyosis (of which eczema is a common comorbidity) resulted in resolution of symptoms within 4 weeks of beginning a skincare regimen including MSM treatments [8].

Anecdotal reports of both oral and topical use of MSM to reduce or relieve symptoms of dermatitis are abundant.

The causes of dermatitis are ultimately unknown, though some researchers believe it may be an allergic disease or chronic inflammatory reaction. MSM's well-documented history and blossoming future in whole-body inflammation reduction makes it an exciting candidate for oral eczema treatment.

Gamma-linolenic Acid and Dermatitis

Studies of the use of Evening Primrose Oil and Borage Oil have produced mixed results historically regarding their effectiveness in treating atopic dermatitis symptoms. However, evidence exists to support the use of EPO and BO for dry skin relief and inflammation reduction. Some studies suggest that, in addition to reducing inflammation, GLA may also help protect DNA [18].

Omega polyunsaturated fatty acids are critical nutrients for skin function and appearance. One study of adults with dry skin or mild eczema found a statistically and clinically significant improvement in the TEWL (transepidermal water loss) index of participants, indicating that dietary supplementation with GLA improves skin barrier function [6, 10].

According to Mount Sinai Hospital, early research indicates that GLA supplementation may be beneficial for arthritis pain and allergy, acne, eczema, and PMS symptoms [11].

Conclusions

While conclusive research is still in its infancy, anecdotal and some clinical evidence suggest that vitamin D supplementation along with MSM and GLA may help improve some symptoms of eczema, psoriasis, rosacea, and chronic dry skin. We expect these improvements to be seen primarily in inflammatory responses such as redness, itching, localized heat, and thickening of the affected area as well as in skin barrier function.

Until the causes of dermatitis and similar conditions are determined, symptom management through trigger avoidance and appropriate lifestyle changes remains the primary way to manage the condition. The Eczema Gummy may help manage symptoms by supplementing nutrients commonly deficient in those with dermatological conditions.

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