



A DIETARY APPROACH TO DRY EYE DISEASE MANAGEMENT



Help your patients to fuel their bodies with the correct nutrients, vitamins, minerals, and supplements.

BY LISA HORNICK, OD, FAO, AND KRISTYNA LENSKY SIPES, OD

Dry eye disease (DED) affects more than 16 million people in the United States.¹ It is a chronic condition that requires continual care and treatment to minimize symptoms. When we educate patients about their DED diagnosis, it is important to start with one of the basics: nutrition.

What we put into our bodies can directly affect how we feel and how our bodies function, and our eyes are no exception. We are all familiar with providing DED patients with artificial tears and warm compresses, but in our practice we also make dietary recommendations as one of the first lines of treatment and a top priority in patient care.

For this article, we put together a list of foods, vitamins, and

supplements that may ease patients' DED symptoms and help keep their eyes healthy. Share these tips with your patients who have DED, along with the smoothie recipe on page 64, which can supply many of these elements all in one tasty drink.

OMEGA FATTY ACIDS

In the treatment of DED, omega-3 fatty acids are often at the top of our list. Along with supplements, we recommend that patients incorporate omega-3s into their everyday diets. Fish such as wild salmon, tuna, and sardines are high in omega-3s. Nuts and seeds such as walnuts, flax, chia, and hemp seeds are great options also.

Omega-3s have long been known for their antiinflammatory properties.

They are activated in the tear film, and a metabolic deficiency in omega-3s can be a cause of chronic ocular surface inflammation.² This chronic inflammation is a root cause of DED. A moderate daily dose of omega-3s can help reduce this inflammation, thus improving tear osmolarity and increasing tear stability.³ Omega-3s also increase the quality of meibomian gland oil, which helps improve the lipid layer in the tear film and prevents evaporative DED symptoms.⁴

Patients should be educated on the characteristics of high quality omega-3 supplements. The therapeutic dose recommended for DED is 2000 mg per day. Tell patients to look for a supplement that has high levels of eicosapentaenoic acid (EPA) and

docosahexaenoic acid (DHA). EPA and DHA should make up 60% to 85% of the formulation. We recommend the triglyceride forms of these over the ethyl ester forms due to their superior bioavailability.⁵ Another important thing to look for in a supplement is the essential fatty acid gamma linolenic acid (GLA). EPA, DHA, and GLA are important because they are the precursors to the antiinflammatory components in fatty acids.⁶ GLA is key because it targets the inflammatory markers in the eye specifically.⁶

VITAMIN D

More and more research is finding that vitamin D is crucial for a properly functioning tear film. Dietary sources of vitamin D include fortified milk, cheese, yogurt, salmon, sardines, and egg yolks. Of course, getting out in the sunshine is another great way to get vitamin D.

Vitamin D deficiency has been linked to impaired tear film function.⁷ Vitamin D most likely protects the eye by helping decrease inflammation on the surface and improving tear secretions.^{7,8} About 40% of US adults are vitamin D deficient, so this is something to keep in mind when we evaluate patients with symptoms of DED.⁹

VITAMIN C

Vitamin C is well known for its role in fighting the common cold and maintaining a healthy immune system, but its benefits for combating DED are equally important. Vitamin C is found in citrus such as oranges, lemons, and grapefruit and in other fruits such as bananas, apples, and blueberries. Vitamin C provides antioxidants that help reduce oxidative stress and can improve the ocular surface by improving tear breakup time and goblet cell density.^{10,11} Vitamin C also promotes healing by forming and maintaining connective tissue, including collagen in the cornea.¹²

VITAMIN E

Vitamin E also helps neutralize oxidation. Vitamin E boosts the

immune system and protects the cells in our eyes from damage. It can be found in foods such as sunflower seeds, almonds, and peanuts. Vitamin E sourced from food may be more beneficial than vitamin E obtained through supplements.¹³

VITAMIN A

Vitamin A is another essential ingredient for combating DED. In fact, dry eyes can be one of the first symptoms of a vitamin A deficiency. Beta carotene in the diet converts to vitamin A. It is best absorbed through diet, so we recommend that patients do not take supplements of vitamin A but rather consume beta carotene in their everyday diets. Beta carotene is found in orange vegetables such as carrots and sweet potatoes. Green leafy vegetables such as spinach and kale are also great sources.

Studies have shown that vitamin A can be a successful therapy for DED.¹⁴⁻¹⁶ Vitamin A increases cell turnover, and this includes corneal epithelial cells. Patients with DED often have signs such as superficial punctate keratitis, caused by loss or damage of the corneal epithelial cells. One study found that vitamin A therapy reduced the number of apoptotic corneal epithelial cells by a factor of 10 compared to a control group.¹⁵

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HYDRATION

In order to produce tears, it is important that the body be properly hydrated. It is important to drink water and other healthful fluids. Some drinks containing antioxidants will not only aid in hydration but will also help prevent oxidation. Green tea contains powerful antioxidants called *catechins*. Catechins have strong antiinflammatory properties that help protect the eye against oxidative stress and may improve tear breakup time.¹⁶ Water, of course, is the best for promoting hydration. We recommend drinking at least 64 oz of water per day to maintain optimal hydration.

THE TAKEAWAY

Food is fuel, and supplying our bodies with the correct nutrients, vitamins, minerals, and supplements can help us lead healthier lives and decrease the risks of chronic conditions including DED. It is essential that we educate patients about the importance of proper nutrition as a cornerstone to their treatment plans.

DED is chronic, and lifestyle changes including dietary changes are crucial in managing symptoms and decreasing the severity of the disease. Encouraging patients to incorporate dietary changes such as staying

DRY EYE SMOOTHIE RECIPE



1 cup organic spinach or kale (for vitamin A)

1 cup frozen mixed berries (for vitamin C)

1 tbsp ground flax seeds or chia seeds
(for omega-3s)

1 banana (for vitamin C)

1 tsp matcha green tea powder (for
catechins)

1 tbsp organic almond butter (for vitamin E)

1.5 cups unsweetened hemp milk
(for omega-3s)

1.5 cups water (for hydration)



These ingredients contain many of the vitamins necessary to help improve dry eye symptoms. Place all ingredients in a high-powered blender and mix on high speed for 30 seconds. Add more water if you desire a thinner consistency. Makes two 16 oz servings.

hydrated and increasing consumption of omega-3s; vitamins A, C, D, and E; and the antioxidants in green tea and other foods and beverages, will benefit not only their eyes but all aspects of their health. ■

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