

## **Finding a Connection between Vitamin D and AMD**

We've been told that sunshine plays an important role in overall health. Vitamin D can be found in juices and dairy products (often labeled "fortified with vitamin D") and in fatty fish like tuna and salmon. But the most natural way for your body to get vitamin D is when bare skin is exposed to sunlight. In as few as fifteen minutes in the sun, before your skin has the chance to develop sunburn, your body produces significant amounts of vitamin D, the sunshine vitamin.

Among other properties, vitamin D offers anti-inflammatory and antioxidant protection. It is recommended to treat weak bones, bone pain, and to prevent fractures in those at risk for osteoporosis. It is also prescribed for those with high blood pressure and high cholesterol.

Since macular degeneration is an inflammatory process, it has been suggested that vitamin D might offer some protection against developing AMD.

Several researchers have put forward the theory that individuals with vitamin D deficiency increase their risk of AMD. A handful of studies have taken place, usually using data collected for other purposes, and the results are inconsistent. In one study, 2,000+ patients with AMD symptoms were followed for 9 years. Those with higher vitamin D intake had a reduced risk of progression from early to advanced AMD (1). Another study reviewed retina photos and medical records of more than 9,700 subjects, and found no association between vitamin D status and early AMD (2).

Another important study looked at 2,000 postmenopausal women and tested levels of vitamin D and evaluated retinal photographs for evidence of AMD. These scientists also tested DNA for two alleles that place people at higher risk for AMD (*CFH* and *CFI*). Those who had a high genetic risk for AMD, and who had a vitamin D deficiency, were 6.7 times more likely to have AMD than those who had an AMD genetic risk and adequate vitamin D levels. The authors concluded that for those individuals who are at risk for developing AMD, a vitamin D deficiency substantially increases the risk (3).

So, if you have AMD should you spend outdoors in the sun, or if sun is in short supply, supplementing your diet with vitamin D? Yes. But will it change your AMD outcome? That answer is not definite. It makes sense that in the case of vitamin D deficiency, the retina's ability to suppress

inflammatory response may be impaired, leading to increased risk of AMD, but as one researcher suggested, some results may be due to reverse causality, “It is possible that no association exists between vitamin D status and AMD . . . since individuals with AMD are less mobile, spending less time outside exposed to sunlight” (2). The AMD may be the cause of the vitamin D deficiency, not the other way around.

1. **Associations between vitamin D Intake and Progression to Incident Advanced Age-Related Macular Degeneration**, Merle BMJ, et al, *Invest Ophthalmol Vis Sci* 58:4569-4578, 2017.
2. **Vitamin D Status and Prevalent Early Age-Related Macular Degeneration in African Americans and Caucasians: The Atherosclerosis Risk in Communities (ARIC) Study**. Millen AE, et al, *J Nutr Health Aging*, 21:772-780, 2017.
3. **Association between vitamin D status and age-related macular degeneration by genetic risk**, Millen AE, et al, *JAMA Ophthalmol* 133:1171-1179, 2015.