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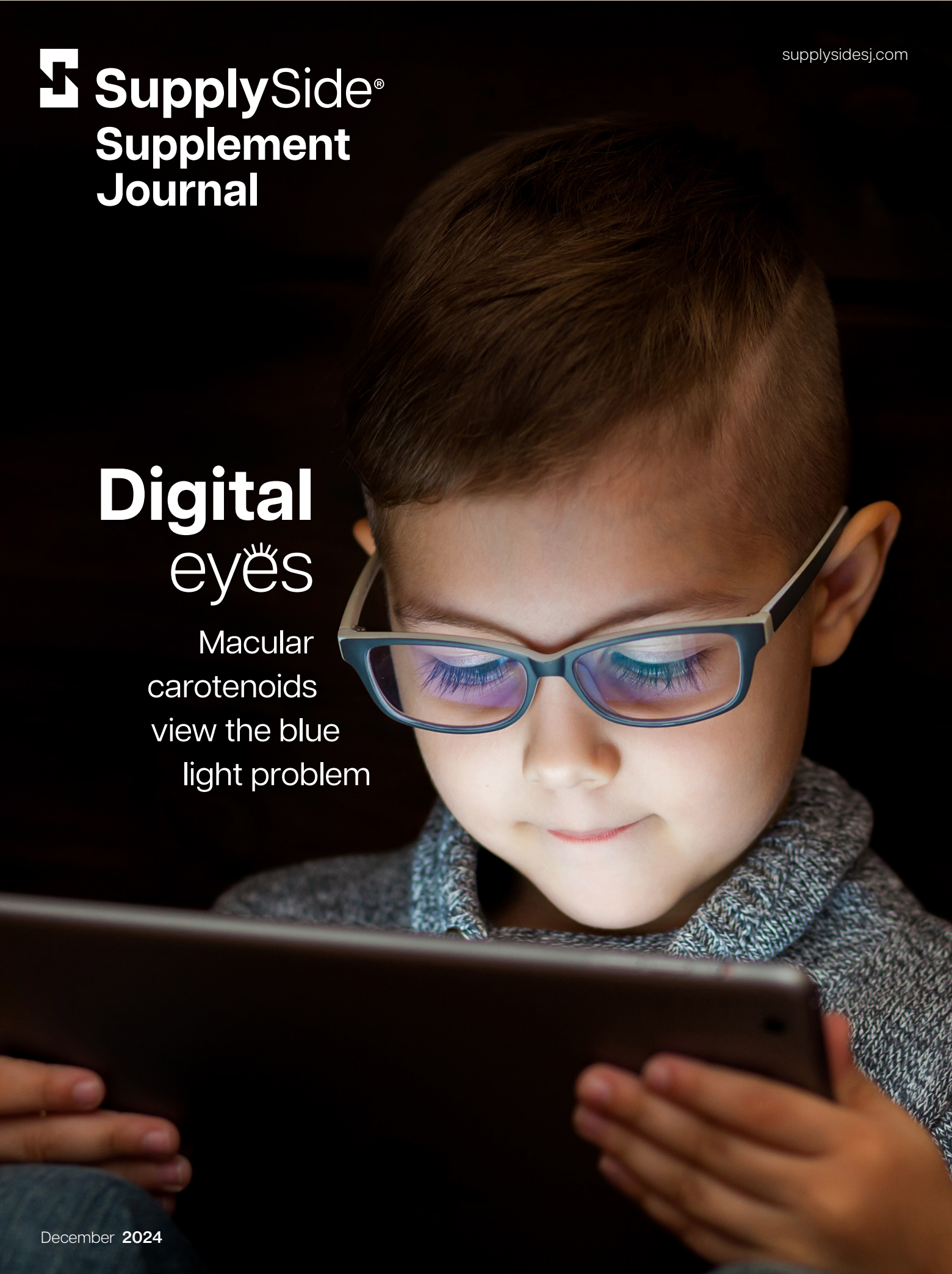

Digital eyes

Macular carotenoids view the blue light problem

December **2024**

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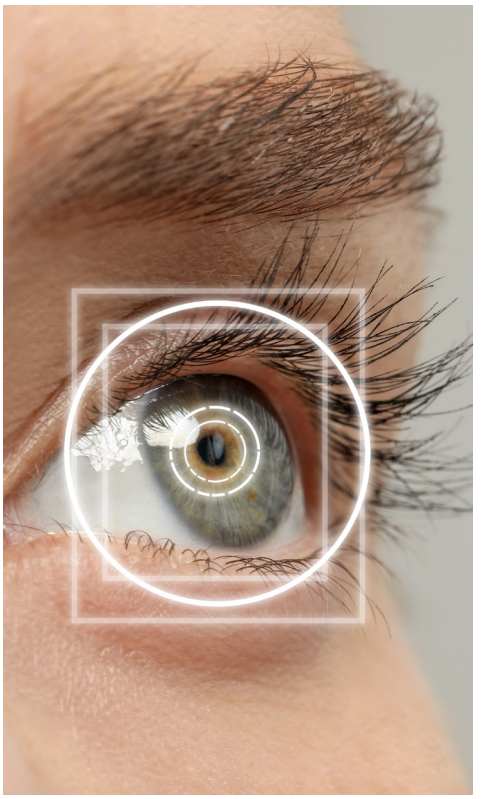

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Save the children!

It wasn't long ago when the state of the science revealed that the leading cause of blindness in those over age 65 was age-related macular degeneration (AMD). As its name suggests, when you get older, the part of the retina in the back of the eyeball called the macula begins to break down. No real big news there — when you get older, your plumbing can start to experience challenges. Your joints ache, your muscles aren't as strong, you get wrinkles, your memory is not as sharp as it used to be. We get it. It makes total sense that something in the eyes will break down, too. Might as well be the macula. You get blurred central vision. Then you go blind.

The macular pigment protects against AMD, mainly because it absorbs blue light. Where does this blue light come from? It's part of the visual spectrum, at the high-energy part of the rainbow. It comes from the sun — and also, of note, from our digital devices.

Turns out that in the last 15 years — since the advent of the first official iPhone — AMD has shifted to being not the leading cause of blindness in those over age 65, but by 2009, for those over age 60. And today's estimate — by age 50!

It doesn't take a conspiracy theorist to ascertain that our screens are doing real damage to our eyesight.

Science note, the macula does not fully mature until age 13 — perhaps even age 15. Which means as long as the adults in the room don't give their pre-teen children a phone or computer, we'll be fine.

But of course, who doesn't?

Research shows the macular carotenoids lutein, zeaxanthin and meso-zeaxanthin can improve the density of the macular pigment, thus preserving its ability to filter blue light.

This spells opportunity for supplements brands.

I suggest every supplement company worth its salt begin rolling out gummy vitamins targeting children, chock-full of the macular carotenoids. And, of course, keep the eye health supps coming for us older folks, too.

This issue, we show you the way there.

See what I'm saying?

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The **eyes** have it

We take a long look at the modern-day eye health market, from dry eyes and blue light damage to age-related macular degeneration.

by Lisa Schofield

Astronaut Steve Austin — aka "The Six Million Dollar Man," a 1970s sci-fi TV character played by Lee Majors — was "rebuilt" with a bionic eye after a tragic spaceship crash.

While some versions of a bionic eye now exist to help restore sight, the real-life heroics may involve taking dietary supplements to help preserve vision and prolong ocular health. Austin lived in an era when digital eye strain was an unknown, but today it's a top driver for consumers in the category.

Vision is our dominant sense; research estimates up to 85% of information our brains receive is linked to what we see. Anything that compromises this ability causes distress.

Scoping the market

Market research shows, in general, a rather robust and growing demand for eye health and vision support.

A report from Fact.MR noted the global eye health supplements market reached $1.9 billion in sales in 2023, and in 10 years, will likely hit around $3.5 billion with a 6.2% CAGR (compound annual growth rate). Maggie McNamara, VP of global marketing for Gencor Pacific, added, "Accordingly, the National Eye Institute [part of the National Institutes of Health (NIH)] estimated that with an aging population, the number of Americans with impaired vision is expected to double by 2050."

In its "World report on vision," the World Health Organization (WHO) estimated 2.2 billion individuals suffer from vision impairment, with at least 1 billion cases preventable or unaddressed. Susan Hamrahi, N.D., scientific communications specialist at AstaReal, maintained, "Eye health is now a major public health issue across all age groups." She pointed to Grand View Research data noting North America dominated the global eye health supplement market in 2023, capturing more than a 35% share.

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Blue light special

Of the 42% of consumers who are aware of the effects of blue light, 71% are proactively trying to reduce their screen time and 69% have built regular breaks from using their devices in their daily lives, FMCG Gurus research indicated.

Tyler Holstein, global product manager at Kemin Human Nutrition & Health Solutions, noted 22% of those shoppers surveyed said they have used nutritional supplements to protect themselves from blue light. He continued, "Many consumers are targeting more of their own behaviors to protect themselves from blue light, but nutritional supplementation is still in the top five ways to combat."

According to DataReportal, Americans in 2023 looked at screens for more than seven hours a day. That number is north of eight hours a day for 41% of those between ages 13 and 18, and between five and six hours a day for children. An estimated 67% of people utilize two or more gadgets simultaneously — and 59% of Americans admit to experiencing symptoms of digital eye strain.

Extended daily screen time has led to greater prevalence of disruptive eye conditions such as dryness, redness and strain. In 2020, 69% of respondents in an Eyesafe survey said they were concerned about prolonged exposure to screens and 65% associated eye irritation with extended use of electronic devices.

"The pervasive use of screens has propelled the eye health supplements market," Hamrahi declared, "with consumers seeking natural-ingredients-based eye health supplements."

This subset of the vision support market is amassing more consumers seeking solutions to digital eye strain and computer vision syndrome. McNamara described the market: "Every type of business professional who spends endless hours in front of computers and online meetings for long hours; teenagers and children who are exposed to constant screen time on their phones and tablets; students who are on their computers and phones; and, of course, the massive market of e-gamers. The potential market size is expanding because candidates for BLE [blue light exposure] and CVS [computer vision syndrome] are endless."

Addressing these issues is critical, as she warned that damage to retinal cells caused by prolonged exposure to blue light may also play a role in the development of cataracts,

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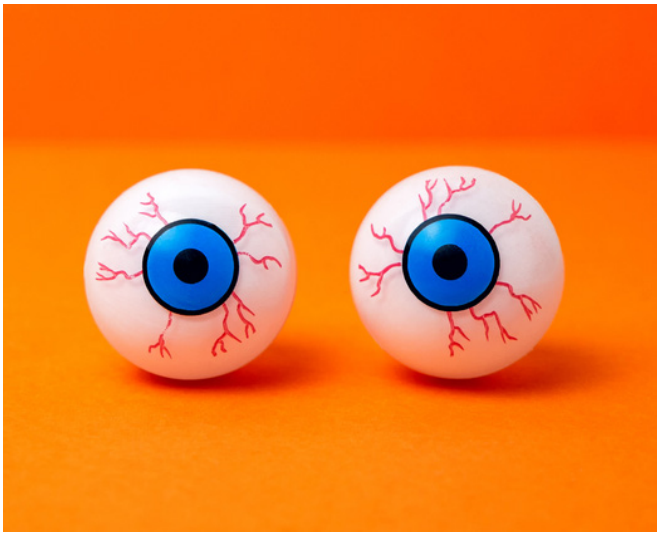
> Extended daily screen time has led to **greater prevalence of disruptive eye conditions** such as dryness, redness and strain.



age-related macular degeneration (AMD) and growths on the transparent layer covering the white portion of the eye.

How dry I am

That gritty, dry feeling on the eyes can drive anyone nuts, and cause continual blinking in an effort to moisten the eyeballs. Dry eye is also a prevalent ocular issue, often caused by repeated bouts of screen gazing day in and day out. This can be exacerbated by contact lenses and allergy season.

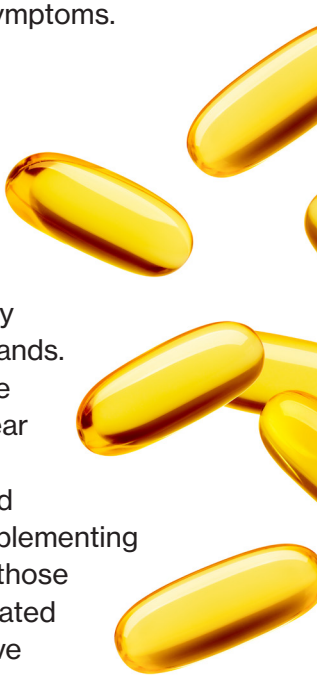
A recent survey by Bausch & Lomb found that 44% of Americans don't know that untreated dry eye can lead to other eye problems and even vision loss. In addition, those with dry eyes said it has the biggest impact on their reading (45%), device use (35%) and driving (31%).

Relief of moderate to severe dry eye was explored through supplementing with an omega-3 blend of 300 mg DHA (docosahexaenoic acid), 1,200 mg EPA (eicosapentaenoic acid) and 150 mg GLA (gamma-linoleic acid) by Nature's Way. In the study, 50 participants consumed the supplement or placebo for three months, and those in the omega-3 group exhibited improvements in an Omega-3 Index test by 34%, leading to "clinically meaningful improvement of dry eye symptoms in extremely symptomatic participants," the authors wrote.

Dry eye is frequently characterized by runaway inflammation. Several well-known ingredients can be folded into a supplement formula aimed at easing dry eye symptoms.

Omega-3, saffron

McNamara touted omega-3 fatty acids for tackling dry eye via inflammation control. One study showed that supplementing with omega-3s may prevent apoptosis of secretory epithelial cells in the meibomian glands. These glands produce a substance that prevents evaporation of the tear film in the eye.



Some studies have demonstrated at least a correlation between supplementing omega-3s in dry eye, as well as in those with computer vision syndrome related to dry eye. Although omega-3s have

As screen viewing is a way of life, **sustaining vision acuity** and **prolonging eye comfort** will continue to be goals of a diverse consumer base.

shown strong support in dry eye scenarios, currently no FDA-approved formulation — nor formal recommendation for the usage of essential fatty acids (EFAs) in treating eye ailments — exists.

A human clinical study showed Gencor's AquaCelle micelle technology to significantly improve absorption while increasing omega-3 uptake by over 600%. Per McNamara, the proprietary ingredient's advantages include: over six times enhanced bioavailability, an option for a smaller dose size for improved EPA + DHA absorption, and potential inclusion in water-based formulations.

Saffron (*Crocus sativa*) falls into this category as well, along with a couple more eye-support advantages. Pharmactive Biotech Products' Affroneye brand saffron extract may help address common vision challenges such as digital eye strain, oxidative stress and age-related vision decline, Carlos Rodríguez, the brand's communication manager, suggested. Potential mechanisms of action include antioxidant, anti-apoptotic and anti-inflammatory effects, which may help improve visual acuity and reduce eye fatigue.

Summoning Captain Curc

In an in vitro study, curcumin also demonstrated an anti-inflammatory effect, which McNamara explained can be "beneficial to ocular surface pathologies such as dry eye." The results have shown that curcumin can reduce the expression of proinflammatory cytokines, including interleukin (IL)-1 beta, IL-6 and tumor necrosis factor (TNF)-alpha, involved in dry eye disease pathophysiology.

She described Gencor's HydroCurc as a cold-water dispersible *Curcuma longa* extract powder specifically designed to increase the absorption of curcuminoids, addressing the bioavailability and functional challenges of curcumin. Utilizing this patented LipiSperse technology allows curcuminoid's typically limited ability to disperse in aqueous environments (such as the stomach) to be enhanced, enabling the ingredient to be incorporated into diverse liquid formats.

Verdure Sciences' Longvida Optimized Curcumin may support areas of eye health and neuronal health, Antonio King, the

company's digital marketing specialist, stated. One study demonstrated Longvida's potential to deliver free curcumin to targeted tissues, specifically the brain and retina.

Dangling the carotenoids

Two of the best-known carotenoids for eye health are lutein and zeaxanthin, and a related up-and-comer, the zeaxanthin isomer meso-zeaxanthin (all collectively known as macular xanthophylls or the macular carotenoids).

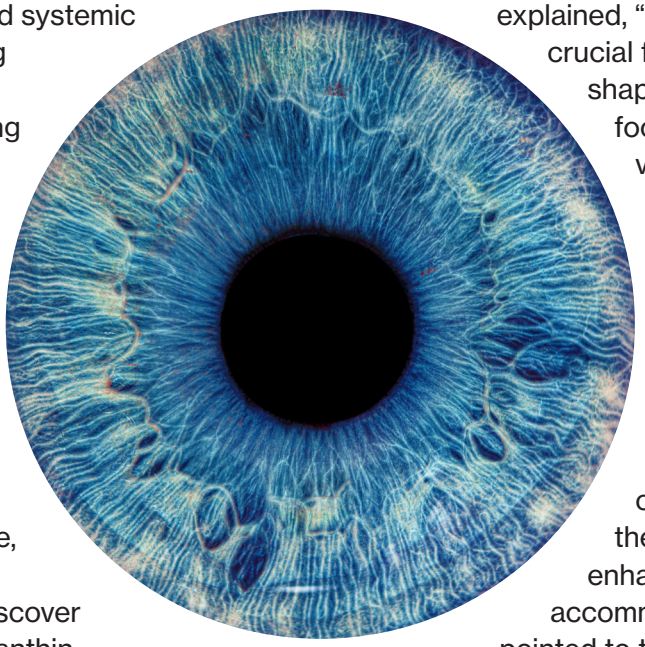
Holstein said these pigmented performers continue to be of high interest when it comes to eye health. He circled back to the FMCG Gurus data cited earlier, emphasizing that almost two-thirds of North Americans associate lutein (63%) and zeaxanthin (61%) with aiding in eye health.

As eye health remains in consumers' line of sight, these carotenoids continue seeing new category entrants. For example, Cepham recently debuted the vision-targeted ingredient Luteye, a combination of lutein and zeaxanthin with extra virgin olive oil enriched with oleocanthal, a phenolic compound. Anand Swaroop, Cepham's founder, pointed to oleocanthal's potential ability to help reduce the eye-aging effects of cellular senescence, a driver that is partially responsible for increasing risk of AMD.

Xanthophyll suppliers highlighted a couple first-of-their-kind studies. In early 2024, OmniActive's Lutemax Kids was clinically demonstrated to support aspects of vision performance, including reduced eye strain and fatigue as a result of digital device use in children 5-12 years of age. The ingredient was also shown to support cognitive outcomes related to processing speed, attention and focus, as well as episodic and visuospatial memory. Deshanie Rai, Ph.D., FACN, VP of global scientific and regulatory affairs at OmniActive Health Technologies, opined, "These outcomes are not surprising given the established role of lutein and zeaxanthin in helping to mediate the eye-brain connection. Lutein amounts in the macula and in the brain have been shown in our study to be positively correlated to cognitive outcomes in children. These benefits are consistent with clinical studies in adults wherein Lutemax 2020 supplementation resulted in improved visual performance and supported outcomes related

to cognitive health, including increased brain-derived neurotropic factor (BDNF) levels."

In addition, Rai noted a growing number of studies have revealed connections between the eyes and the brain impacting factors such as sleep quality. "More research into these connections may unveil new insights into the interplay between ocular health, neurological function and systemic health," she said, "paving the way for innovative approaches to supporting overall health through the life span."



FloraGLO Lutein and OPTISHARP Zeaxanthin were recently used in the Lutein and Zeaxanthin in Pregnancy (L-ZIP) clinical trial funded by the National Eye Institute, Holstein reported. The novel study sought to discover whether lutein and zeaxanthin should be added to standard-of-care prenatal vitamins. Results showed statistically significant and clinically important increases in maternal and infant systemic and ocular carotenoid levels following supplementation.

Another strong carotenoid for eye health is astaxanthin. In a 2020 review, researchers concluded the ingredient has demonstrated "a good safety profile" and "has the advantage to directly address the main pathogenic factors underlying ocular diseases, such as cumulative oxidative stress and chronic subclinical inflammation."

AstaReal brand astaxanthin has completed more than 16 clinical studies related to ocular health benefits, particularly concerning the role of the eye's ciliary body in vision accommodation, Hamrahi shared. She explained, "The ciliary body is crucial for adjusting the lens shape, allowing for proper focusing on objects at varying distances. This process is inherently energy-dependent and is influenced by both muscular and cellular functions within the ciliary body."

Research indicated the cumulative effects of astaxanthin on the ciliary body could enhance the efficiency of accommodation. Hamrahi pointed to the ingredient's potential benefits as an antioxidant and anti-inflammatory, as well as supporting enhanced blood flow and mitochondrial protection.

Eye health — and eye comfort — are increasingly in the spotlight. As screen viewing is a way of life, sustaining vision acuity and prolonging eye comfort will continue to be goals of a diverse consumer base. It's easy to see the opportunities in the vision-support supplement market. ■

Lisa Schofield is a veteran writer and editor who got her start interviewing rock stars for national music magazines. She now writes and edits content for B2B media and suppliers in the natural health product industry. She has served as editor for Vitamin Retailer and Nutrition Industry Executive, and prior to that as associate editor for Whole Foods.

Watch me **work**

The macular carotenoids – lutein, zeaxanthin and meso-zeaxanthin – are natural protectants against macular degeneration and blue light damage. Here's how they help.

by David Foreman

Macular carotenoids are naturally occurring pigments in the eye's retina that are responsible for central vision and high visual acuity. These carotenoids – lutein, zeaxanthin and meso-zeaxanthin – play a critical role in protecting the eye from oxidative stress and potentially harmful sources of light.

The highest energy band of the visible spectrum, blue light has shown in animal studies to cause oxidative stress and to damage the retina (especially the macular area). Extended exposure to blue light has been shown to cause long-term damage to the eyes. Blue light exposure is an identified risk factor for the development of age-related macular degeneration (AMD), which is among the leading causes of blindness worldwide.

All three macular carotenoids function primarily by absorbing blue light, which can cause oxidative damage to retinal cells. Blue light exposure has rapidly increased in the last decade or two because everything from indoor lighting to digital devices like smartphones, computer monitors and tablet screens emit blue light. The macular carotenoids naturally filter blue light, making these nutrients vital for supplement brands looking to address this relatively new, modern health concern.

The macular carotenoids also act as powerful antioxidants, neutralizing free radicals in the retina and thereby reducing oxidative stress. Their antioxidant properties also contribute to maintaining eye health and helping prevent AMD.

Thus, their ability to filter blue light and mitigate oxidative damage contributes to reduced risks of both AMD and cataracts while supporting overall visual performance.

Lutein and zeaxanthin must be obtained from dietary sources. Meso-zeaxanthin is rarely found in the diet and is believed to be formed

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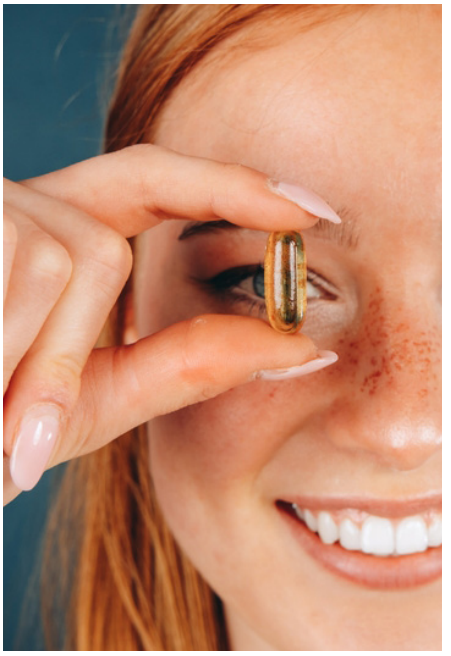
> The macular carotenoids **naturally filter blue light**, making these nutrients **vital for supplement brands** looking to address this relatively new, modern health concern.

at the macula by metabolic transformations of ingested carotenoids.

Lutein

Lutein is a dietary carotenoid found abundantly in green leafy vegetables like spinach, collard greens and kale. It accumulates in the macula and retina, serving as a blue-light filter, protecting the retinal cells from light-induced oxidative damage.



Visual function improvement: Research linked lutein supplementation with improved visual function in individuals with early AMD. Participants supplementing with 10 mg lutein daily for a year showed significant improvements in glare recovery and contrast sensitivity, suggesting lutein's protective role in maintaining visual performance under stress conditions.

A randomized double-blind placebo-controlled study using 20 mg/d lutein for six months on 126 subjects with AMD showed 28% increased macular pigment optical density. This led to an improvement in macular function and visual acuity after the six months.

Another study using 12 mg/d lutein for two years led to improved visual acuity.

Some of the most famous research on eye health comes from AREDS and AREDS2 — age-related eye disease studies. These trials used 10 mg lutein, along with a combination of vitamins and other micronutrients (specifically 2 mg/d zeaxanthin, 500 mg vitamin C, 400 IU vitamin E, 15 mg beta-carotene, 80 mg zinc and 2 mg copper).

The original AREDS study reduced the risk of developing advanced AMD. The AREDS2 study — which also included 1 g/d omega-3 fatty acids and substituted out the beta-carotene with 10 mg lutein and 2 mg zeaxanthin — found best results in the lowest 20% of pre-study lutein intake.

That study solidified the conventional wisdom among supplement formulators to use the 10/2 combo for eye health — 10 mg lutein and 2 mg zeaxanthin.

AMD and cataract prevention: Several studies have shown that high lutein intake — either through diet or as a nutritional supplement — has beneficial effects on eye diseases, preventing or even improving AMD and cataracts. One prospective study found a correlation between dietary intakes of lutein and zeaxanthin and later cataract incidence. Other similar studies have validated the relationship between dietary sources of lutein and cataract incidence.

> The conventional wisdom among supplement formulators is to use a **10/2 combo for eye health** – **10 mg lutein and 2 mg zeaxanthin.**

Zeaxanthin

Zeaxanthin is a natural carotenoid from plants, algae and microorganisms, found in foods such as hot chili peppers, corn, orange and red peppers, microalgae and egg yolks. Zeaxanthin is another critical macular pigment that, like lutein, accumulates in the retina, particularly in the macula. Zeaxanthin has shown to protect the central vision area and has similar antioxidant and blue-light filtering functions.

Protection against blue light: Zeaxanthin has been shown to protect against the harmful effects of blue light. Too much blue light can promote the production of free radicals, with long-term exposure increasing the risk of damage to the macula cells and causing a progressive loss of visual function, such as that seen in AMD.

Reduced risk of cataracts and AMD: Zeaxanthin has also been tied to reducing the risk of cataracts and AMD progression. Lutein and zeaxanthin have also been indicated in age-related cataract prevention, especially nuclear cataract in a dose-response manner.

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Lutein lessons: An infographic

One meta-analysis observed a dose-response benefit with zeaxanthin, with each 300 mcg/d increase in zeaxanthin (aka, 1/3 mg) corresponding to a 3% risk reduction of certain types of cataracts. That means formulating with the standard dose of 2 mg zeaxanthin could result in about an 18% reduction in cataract risk.

Meso-zeaxanthin

Meso-zeaxanthin is less commonly found in the diet, but it has been detected in shrimp carapace, fish skin and turtle fat; additionally, it can be synthesized from lutein in the retina. This carotenoid predominantly accumulates at the center of the macula, with one study showing it is critical for optimal visual performance and protection against oxidative stress.

Enhanced visual performance: The same study indicated meso-zeaxanthin can optimize visual performance and experience by attenuating chromatic aberration (known as color fringing, a color distortion that creates an outline of unwanted color along the edges of objects in a photograph), veiling luminance (the effect produced by bright sources or objects in the visual field that decreases visibility and visual performance), and blue haze (a temporary vision disturbance that can occur after exposure to certain industrial chemicals. Symptoms include blue-gray vision, halos around bright objects and fogging of vision).

Heart-y carotenoids

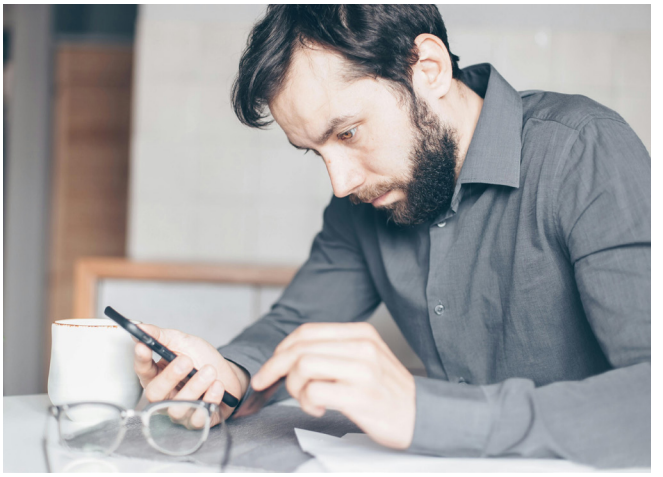
The protective effects of certain carotenoids for vision issues like age-related macular degeneration and cataracts have been established. But a new study suggested a completely different health benefit — the three may also protect the heart.

The research showed the antioxidant properties of lutein, zeaxanthin and meso-zeaxanthin could be beneficial in restricting the formation of arterial plaque. Known as atherosclerosis, this plaque buildup reduces blood flow to the heart and increases the risk of blood clots. Arteries blocked by blood clots can lead to a heart attack, stroke or other complications.

"Oxidative stress is one of the most salient risk factors in the pathogenesis of atherosclerosis," the researchers wrote. "Mechanistically, the oxidation of low-density lipoprotein (LDL) particles within the vascular endothelium has been hypothesized to be the initial event that occurs in the formation of atherosclerotic plaques."

The study found a statistically significant difference in the amount of oxidized LDL and inflammatory cytokines in the blood of the experiment group compared to the placebo group. Obtaining this result with plant-based antioxidant molecules is hardly novel; however, the researchers noted the study is the first to demonstrate the effect with macular carotenoids supplemented directly in humans. The dosage used was the standard 10 mg lutein, 2 mg zeaxanthin and 10 mg meso-zeaxanthin.

Extended exposure to blue light has been shown to cause **long-term damage** to the eyes.



Synergistic effect with other carotenoids: Concentrated at the center of the macula, meso-zeaxanthin has shown in studies that when combined with lutein and zeaxanthin, the three become even more effective than they are on their own.

The macular carotenoids — lutein, zeaxanthin and meso-zeaxanthin — are essential for maintaining eye health, protecting against age-related macular degeneration and improving visual function. Clinical studies consistently show that these carotenoids protect the retina by filtering harmful light and acting as antioxidants. Supplementation with all three carotenoids has demonstrated synergistic benefits, notably in improving visual performance and protecting against the progression of AMD. ■

David Foreman is a registered pharmacist, author and media personality known as "The Herbal Pharmacist." Foreman is a graduate of the University of South Carolina College of Pharmacy, currently serves on the Organic & Natural Health Association's (O&N) scientific advisory board and is the author of "4 Pillars of Health: Heart Disease."

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Gamer on
Eye health is one of five esports trends.
6 m read

A is for angels

Source: Vitamin Angels

Vitamin A's ability to help prevent childhood blindness inspired the public health nonprofit Vitamin Angels to begin providing baseline nutritional support to people in need around the world. We sat down with visionary founder Howard Schiffer, who this year commemorates 30 years of yeoman's work.

SupplySide Supplement Journal: What was the original mission, and where are you today?

Howard Schiffer: Although "vitamin A deficiency childhood blindness" was Vitamin Angels' initial focus, we soon realized that besides vision (and skin health), vitamin A has a major impact on building immunity and thereby reducing child mortality. So, Vitamin Angels' focus over 30 years became "to improve nutrition and health outcomes in low-resource communities for underserved populations of women, infants and children from conception to age 5."

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Vitamin Angels started with **vitamin A**, which is an essential nutrient for young children to **prevent blindness** and **improve immune function.**

SupplySide Supplement Journal: Vitamin Angels has reached millions of vulnerable individuals worldwide. Looking back, what has been the most powerful moment or partnership for Vitamin Angels, and how has that shaped the organization's mission and growth?

Schiffer: There have been a lot of incredible, impactful moments overs the last 30 years. I would consider the turning point to be in 2018, when we launched our Global Prenatal Campaign, delivering multiple micronutrient supplements (MMS), also known at prenatal multivitamins, to underserved pregnant women around the world. The evidence was clear that MMS could safely and effectively improve maternal health and pregnancy outcomes and set children on a path toward healthy growth and development.

While we had already been improving the health of children in need for nearly two decades, we knew that good nutrition from the very beginning was key to a healthy start in life, starting with healthy women who have healthy pregnancies. This nutrition intervention was the next step in achieving our mission to improve the health of the most vulnerable populations around the world.

The same year we launched the program, we had a new partner approach us and donate 1 million bottles of prenatal multivitamins that adhered to our specific formulation and international quality standards. Today, they are our largest product donor and have played a central role in helping us scale our global prenatal program.

SupplySide Supplement Journal: Could you share a success story that illustrates how Vitamin Angels' work has directly improved individuals' quality of life, especially in underserved populations?

Schiffer: The United States has the highest rate of maternal mortality of any industrialized country. A woman in the U.S. is three

read

Take heart

Macular carotenoids also show heart health benefit.

3 m read

The United States has the **highest rate of maternal mortality** of any industrialized country.

times as likely to die during pregnancy or childbirth than a woman in Canada, Britain, France, Germany or Australia. Moreover, the problem is getting worse, not better. Maternal mortality rates in our country doubled between 2018 and 2021.

Adding to the problem, a report in the Journal of the American Medical Association noted that in the past 10 years, one half of all rural hospitals have closed their labor and delivery wards, meaning women in these communities have little to no medical or nutritional support during their pregnancy. While there are many reasons for an at-risk pregnancy, such as hypertension and diabetes, we know that essential nutrition is key for a healthy pregnancy and a healthy baby.

Vitamin Angels did a survey a couple of years ago and found that there are more than 1 million pregnant women in the U.S. with little to no access to prenatal multivitamins. We set a goal to reach one half of these women by the end of 2024. We're happy to report that by the end of this year, we will be achieving our goal by reaching 500,000 of these women. We know that prenatal multivitamins improve birth outcomes, decreasing the likelihood of low birthweight babies, babies who are small for gestational age, and preterm births. All of these conditions can be life-threatening to both the mother and baby.

SupplySide Supplement Journal: What are some of the common health issues you encounter in the regions where Vitamin Angels operates?

Schiffer: Undernourished women are more likely to develop serious complications during pregnancy and birth. For example, anemia affects 36% of pregnant women globally and is believed to increase the risk of death due to post-partum hemorrhage — the leading cause of maternal death.

Women in low- and middle-income countries are at a higher risk of anemia because their diets are more likely to be iron deficient. In countries like Haiti and India, 50% of the pregnant population is anemic. Children of undernourished women are more likely to experience physical and cognitive setbacks that can keep them from reaching their full potential as adults.

For children, vitamin A deficiency is the leading cause of preventable childhood blindness and increases their risk of illness and death from common childhood illnesses such as diarrhea and measles. An estimated 250,000-500,000 children suffering from vitamin A deficiency become blind each year, and half of them die within 12 months of losing their sight.

Up to **half a million children** suffering from vitamin A deficiency **become blind each year**, and half of them die within 12 months of losing their sight.

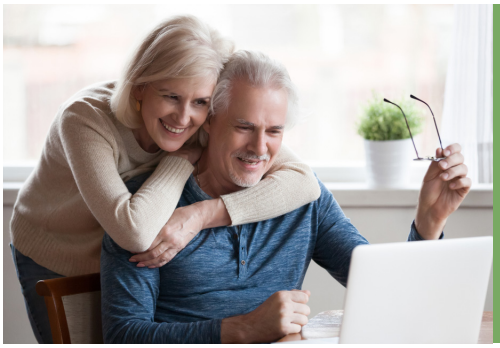
SupplySide Supplement Journal: With so many supplements on the market, what do you look for when choosing the right product for an intervention?

Schiffer: At Vitamin Angels, we use only evidence-based nutritional supplements. All pharmaceutical and nutritional supplement products are manufactured consistent with internationally recognized quality and manufacturing standards and delivered consistent with best practices.

For example, the MMS (prenatal multivitamins) provided by Vitamin Angels are consistent with the United Nations International Multiple Micronutrient Antenatal Preparation formula and manufactured to international quality standards. UNIMMAP contains 15 vitamins and minerals, including iron and folic acid, in recommended doses that have been widely tested for efficacy and effectiveness in multiple regions. More than 20 years of research shows that the UNIMMAP formulation is standardized, safe and effective for use by pregnant women, no matter where they live.

SupplySide Supplement Journal: How can the dietary supplement industry and its stakeholders further support Vitamin Angels' mission?

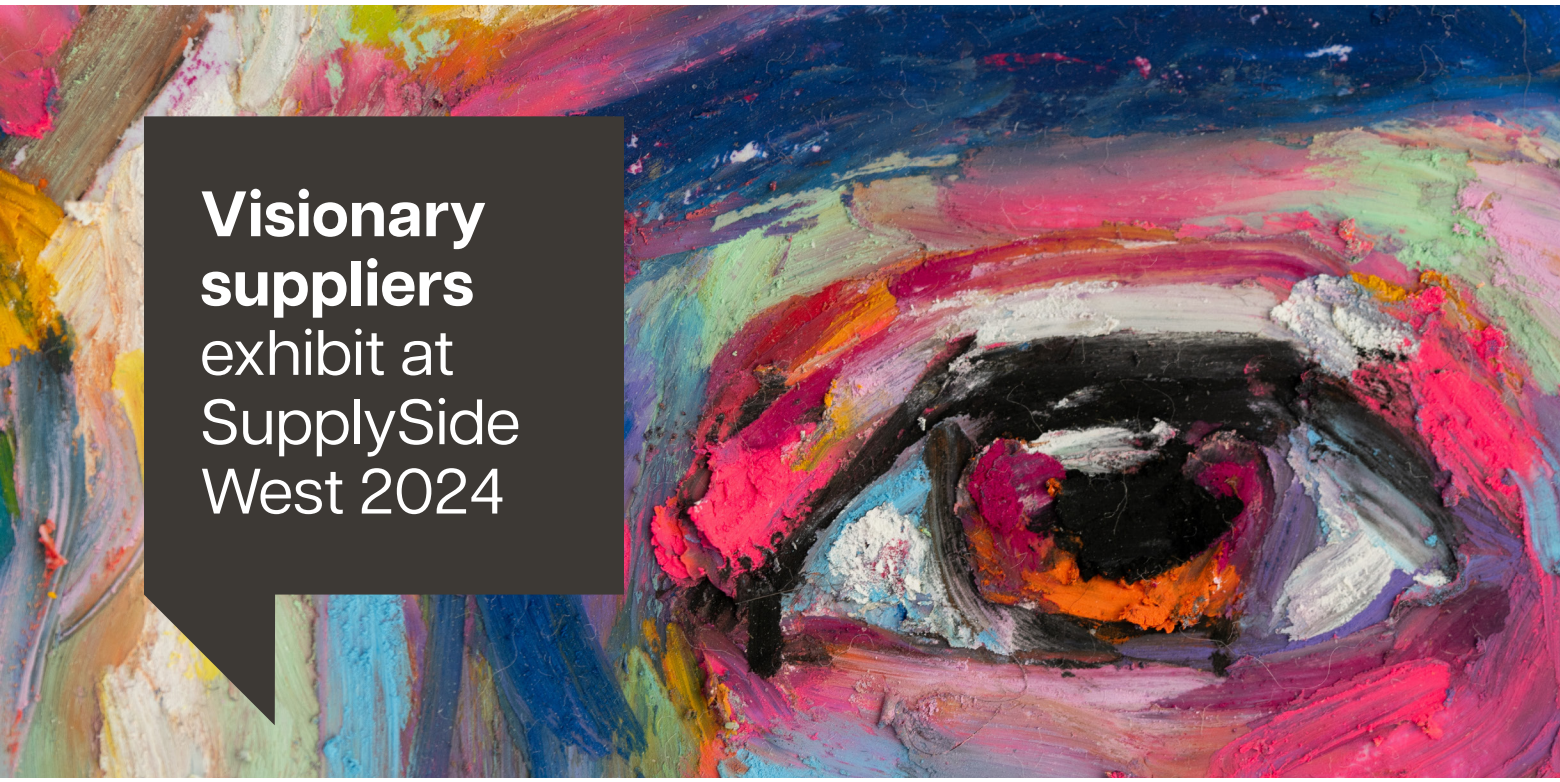
Schiffer: Our work wouldn't be possible without the support of our corporate partners. We're so fortunate to work with some of the best companies in the dietary supplement industry. Not only do they have amazing products, but they are passionate about making this world a healthier place through nutrition. If you're interested in partnership and/or donating, please reach out us via our website at vitaminangels.org. ■



watch

Marketers: Watch out for the vision trend

2:52 h video



Visionary suppliers exhibit at SupplySide West 2024

During SupplySide West in Las Vegas this October, eye health took center stage, with a range of cutting-edge ingredients showcased by suppliers vying for the attention of CPG supplement brands. Vision is increasingly a consumer concern, thanks to our modern lives in front of screens as close to 24/7 as anything modern life has yet cooked up.

Top players in the space like Horphag's Pycnogenol, OmniActive's Lutemax 2020 and Kyowa Hakko's Eyemuse are redefining what's possible for vision care in the nutraceutical market. Each brings something unique: Pycnogenol's potent antioxidant punch, Lutemax 2020's clinically backed lutein-zeaxanthin-mesozeaxanthin combo for blue light protection, and Eyemuse's immune-support benefits for eye health.

Meanwhile, Unibar's CapsiClear, BASF's Xangold, Svarn Herbals' XanOpti, and InnoBio's MariGuard have fortified this lineup with innovations targeting macular and retinal support.

For CPG brands, this presents a powerful opportunity to cater to the booming consumer demand for visual wellness solutions, as screens and digital fatigue continue to affect our daily lives. With such targeted and differentiated ingredients now readily available, brands have a rich palette to craft the next generation of eye health supplements that speak to today's eye-weary consumer. Check out what we saw on offer in the marketplace at SupplySide West 2024.

click to go!

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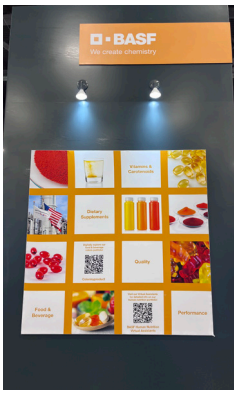


BASF

Xangold

Lutein esters are a naturally occurring form of lutein in the diet. BASF offers free lutein as well as lutein esters (Xangold) from certified organic Peruvian marigold flowers (*Tagetes erecta*), vertically integrated from the same reliable source every year. BASF's microencapsulation technology enables production of lutein esters in oil and powder form for supplements, as well as fortification of foods and beverages. The oils come in 15% and 30%, and powders in 10% and cold-water dispersion grade for liquid applications. Research suggests that Xangold lutein esters support the normal production of macular pigment. Quality and production controls from start to end ensure consistently high product quality.

Horphag

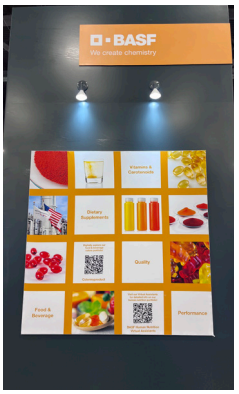
Pycnogenol

The French maritime pine bark extract has scads of published clinical research showing possible benefit for a wide range of health concerns. The mechanism of action of Pycnogenol may be related to its antioxidant, anti-inflammatory and capillary-protectant activity. Bioactives may bind to the blood vessel wall protein and mucopolysaccharides and produce a capillary "sealing" effect, leading to reduced capillary permeability. One double-blind study using 50 mg three times daily showed the ingredient preserved the status of patients with retinopathy — which is characterized by damaged retinal blood vessels and can lead to vision loss.

InnoBio

MariGuard

MariGuard Marigold contains the macular carotenoids lutein and zeaxanthin — the primary pigments that make up the macular region of the retina, offering protection against blue light damage and possessing strong antioxidant capabilities to help prevent age-related macular degeneration (AMD). The ingredient uses InnoBio's Caroblast microencapsulation technology, tied to improving molecular integration and enhancing bioavailability — the company's studies showed an increase of almost four times the bioavailability compared to crystal lutein (3.8), as well as that of crystal zeaxanthin (3.6). The Caroblast double-layer embedded technology — also useful for other ingredients — ensures stable delivery of active ingredients in tablet application. The innovative optimized formulation demonstrates enhanced blue light protection with superior bioavailability.



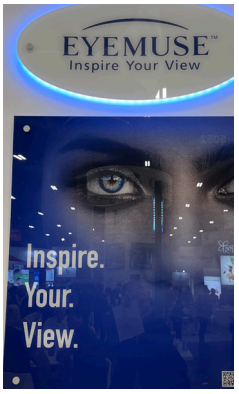
Kemin

Carotenoid portfolio

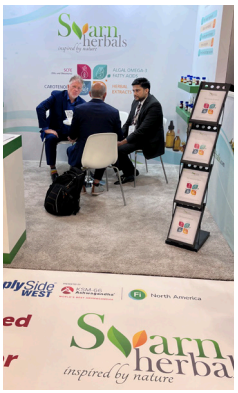
Kemin made a name for itself with FloraGLO, the OG lutein source used in the landmark AREDS 2 study showing efficacy for lutein, zeaxanthin and omega-3s for AMD. It remains the most-studied lutein source in the world. In addition to FloraGLO, Kemin has ZeaONE/OPTISHARP Natural Zeaxanthin; Macu-LZ, which contains the three macular carotenoids lutein, zeaxanthin and meso-zeaxanthin; and Macu-LE, a lutein ester.

Kyowa Hakko USA

Eyemuse



Who needs carotenoids? An interesting entrant to the eye-health world is a postbiotic — a heat-killed *Lactobacillus paracesei* probiotic strain KW3110. Made using a proprietary cultivation, separation, pasteurization and drying process, the ingredient uses no raw materials of animal origin, no GMOs (genetically modified organisms) and no organic solvents. Eyemuse is Prop 65-compliant. One mice study found it addresses occasional blue light effects and supports retina health, possibly reducing the effect of blue light by activating immune cells. Another study found effects on eye fatigue on 88 healthy subjects over eight weeks.



Svarn Herbals

XanOpti, CaroActivX, AstaBest

The Indian company operates a 50,000-square-foot facility powered by green technologies. In-house algae ponds — as well as partnerships in marigold and tomato farming — provide seamless backward integration from seed to product. The company's comprehensive range of organic carotenoids is derived from plant, fungal and algal sources, and processed solvent-free, using supercritical fluid extraction technology to ensure high purity, stability and quality.

Unibar

CapsiClear

A naturally derived carotenoid ingredient made from chili pepper fruit, CapsiClear has been concentrated to provide at least 50% capsanthin, plus other carotenoids including zeaxanthin and cryptoxanthin. Marketed as a "5-in-1 eye health solution," the five benefits include help for dry eye (rat study), increased macular pigment optical density (unpublished, 21 subjects), decreased intraocular pressure (rat study), as well as blue light protection with improvements in eye strain and fatigue. ■