

a new standard

ZeaONE™ is a new, naturally sourced dietary zeaxanthin ingredient from Kemin, the makers of FloraGLO® Lutein—the most clinically researched and science-backed lutein brand in the world.¹ And just as FloraGLO did for lutein, ZeaONE is setting a new standard for zeaxanthin. The same “free” form as is found naturally in our diet, ZeaONE from marigolds helps you provide the clinically proven benefits of the zeaxanthin nutrient the way nature intended.

The latest research recommends at least 10 mg of lutein and 2 mg of zeaxanthin daily to demonstrate eye health benefits and improve visual performance.²⁻¹¹ However, getting these amounts through diet alone can be difficult, and in the case of zeaxanthin, it’s incredibly difficult.

ZeaONE can help your customers bridge the zeaxanthin gap in their diets and give you a naturally sourced, advantageous approach to meet new eye health formula recommendations.

10%

Most Americans consume only 10% of the zeaxanthin and lutein needed each day to help protect their eyes and keep them healthy.¹²



Zeaxanthin—The Way Nature Intended

For many people an eye vitamin is the best source for their daily supply of zeaxanthin. However, many formulations don't provide the clinically studied amounts of dietary zeaxanthin that your customers need each day for optimal vision. When you choose FloraGLO®, choose ZeaONE™ as well and deliver zeaxanthin the way nature intended.

Eye Protection

Zeaxanthin, like lutein, is a protective antioxidant that our bodies need to help keep our eyes healthy. The body selectively deposits zeaxanthin and lutein in the macula as macular pigment. Higher macular pigment translates to a stronger layer of protection. Supplementing our diets with at least 10 mg of FloraGLO Lutein and 2 mg of zeaxanthin is clinically proven to increase macular pigment.²⁻¹¹

Meet the demand for AREDS2 eye vitamin formulations with ZeaONE—the naturally sourced and dietary, free-form of zeaxanthin, a nutrient proven to promote eye health.

A Good Thing for Everyone

Together zeaxanthin and lutein can help reduce the risk of certain eye conditions, including age-related macular degeneration (AMD).¹³⁻¹⁶ But the benefits of zeaxanthin aren't reserved just for those at risk for eye conditions, or for those over 50. Zeaxanthin can help to enhance visual performance and help maintain the quality of vision as we age.⁷⁻¹⁰ That's market potential.

Choosing ZeaONE™ — An Important Difference

Not all dietary zeaxanthin is the same—it can be either in a non-esterified (free) or an esterified form; however, 93% of the total zeaxanthin and lutein in the diet is present in the free-form. To absorb an esterified form of zeaxanthin, it must first be de-esterified by the body—an enzymatic process that varies among individuals and can affect absorption.¹⁷ Free-zeaxanthin, like ZeaONE, is directly absorbed into the bloodstream delivering important benefits.¹⁷

When you buy zeaxanthin that contains both free and esterified forms it can present labeling and formulation issues.

Demand the Real Thing

Unfortunately, some zeaxanthin represented as “zeaxanthin isomers” or dietary zeaxanthin is purposefully formulated to contain 3R,3’S-*meso*-zeaxanthin, a zeaxanthin isomer which is quite different than dietary zeaxanthin and is not a suitable replacement.

- ▶ **Meso-zeaxanthin isn’t found naturally in the diet—for a reason.** Nature has given us abundant sources of dietary zeaxanthin like the dietary zeaxanthin found in ZeaONE. *Meso*-zeaxanthin; however, is not found naturally in the diet. Although *meso*-zeaxanthin is a component of the macular pigment, research supports that it is a result of a natural conversion of lutein in the macula.
- ▶ **Meso-zeaxanthin science is in its infancy.** Evidence to support the efficacy of *meso*-zeaxanthin is lacking compared to studies linking dietary zeaxanthin and lutein supplementation to improved eye health.¹⁸ This includes the landmark AREDS2 study, which did not include *meso*-zeaxanthin in any of the test supplements.

Additionally, the reported research on the eye health benefits of *meso*-zeaxanthin also reports that *meso*-zeaxanthin as well as dietary lutein and zeaxanthin were in the study test articles, supporting that the observed benefits are not attributable to *meso*-zeaxanthin alone.

Demand dietary zeaxanthin—the form found in ZeaONE and the form proven in scientific research and safety reviews.

Further *meso*-zeaxanthin research on its safety, benefits and interaction with lutein and zeaxanthin is needed. Evidence suggests *meso*-zeaxanthin may compete with zeaxanthin and lutein absorption, hindering these two nutrients from reaching the macula where they are critical for maintaining healthy eyes and protecting our vision as we age.¹⁹⁻²¹

Meso-Zeaxanthin Science is in its Infancy

	Dietary Lutein (as FloraGLO®) and Zeaxanthin	Meso-Zeaxanthin (in combination with lutein and zeaxanthin)
Years of Clinical Study	18*	6
Total Number of Published Human Clinical Trials	64*	7
Trials with Different Investigators†	✓	—
Found Naturally in...		
Diet	✓	—
Macula	✓	✓
Skin	✓	—
Breast Milk	✓	—
Brain	✓	—
Included in AREDS2	✓	—

*Based on a biannual PubMed search analysis as of October 2013. Counts include studies using FloraGLO Lutein—the most clinically researched lutein brand worldwide.¹ Numbers are considerably higher when other sources of dietary lutein and zeaxanthin are considered.

† Refers to trials where there were not individual investigators in common among all trials

ZeaONE™

a new standard

Dietary,
Free-Form of
Zeaxanthin

Naturally
Sourced from
Marigolds

From Kemin,
the FloraGLO®
Lutein Pioneer

Naturally Sourced Ingredients from a Name You Can Trust

Backed by nearly 20 years of worldwide scientific research, FloraGLO Lutein is the most trusted and recommended lutein brand on the market. When you choose Kemin's ZeaONE Zeaxanthin, you're getting that same exceptional quality and service you've come to expect from FloraGLO.

Based on AREDS2 research, NEI recommends 10 mg of lutein and 2 mg of zeaxanthin as the new standard of care for eye health.²² ZeaONE is the perfect way to update your formulations to meet those recommendations. In an absorbable form, beneficial, and naturally sourced—ZeaONE raises the bar among zeaxanthin ingredients and helps you confidently deliver quality, plant-based nutrients your customers can count on for maintaining the health of their eyes, every day.

1. Kemin Foods L.C. Internal Memorandum based on PubMed Search. 2. Dawczynski, J., Jentsch, S., Schweitzer, D., Hammer, M., Lang, G. E., and Strobel, J. (2013) Long term effects of lutein, zeaxanthin and omega-3 LCPUFAs supplementation on optical density of macular pigment in AMD patients: the LUTEGA study, *Graefes Arch Clin Exp Ophthalmol*. 3. Arnold, C., Winter, L., Frohlich, K., Jentsch, S., Dawczynski, J., Jahreis, G., and Bohm, V. (2013) Macular Xanthophylls and omega-3 Long-Chain Polyunsaturated Fatty Acids in Age-Related Macular Degeneration: A Randomized Trial, *JAMA Ophthalmol*, 1-9. 4. AREDS2 Research Group. (2013) Lutein + Zeaxanthin and Omega-3 Fatty Acids for Age-Related Macular Degeneration: The Age-Related Eye Disease Study 2 (AREDS2) Randomized Clinical Trial, *JAMA*, In Press. 5. Richer, S., Park, D-W., Epstein, R., Wrobel, J.S. and Thomas, C. (2012) Macular Re-pigmentation Enhances Driving Vision in Elderly Adult Males with Macular Degeneration, *J. Clin. Exp. Ophthalmol* 3, 217-221. 6. Richer, S. P., Stiles, W., Graham-Hoffman, K., Levin, M., Ruskin, D., Wrobel, J., Park, D. W., and Thomas, C. (2011) Randomized, double-blind, placebo-controlled study of zeaxanthin and visual function in patients with atrophic age-related macular degeneration: the Zeaxanthin and Visual Function Study (ZVF) FDA IND #78, 973, *Optometry* 82, 667-680 e666. 7. Stringham, J. M., and Hammond, B. R. (2008) Macular pigment and visual performance under glare conditions, *Optom Vis Sci* 85, 82-88. 8. Rodriguez-Carmona, M., Kvensakul, J., Harlow, J. A., Kopcke, W., Schalch, W., and Barbur, J. L. (2006) The effects of supplementation with lutein and/or zeaxanthin on human macular pigment density and colour vision, *Ophthalmic Physiol Opt* 26, 137-147. 9. Kvensakul, J., Rodriguez-Carmona, M., Edgar, D. F., Barker, F. M., Kopcke, W., Schalch, W., and Barbur, J. L. (2006) Supplementation with the carotenoids lutein or zeaxanthin improves human visual performance, *Ophthalmic Physiol Opt* 26, 362-371. 10. Schalch, W., Cohn, W., Barker, F. M., Kopcke, W., Mellerio, J., Bird, A. C., Robson, A. G., Fitzke, F. F., and van Kuijk, F. J. (2007) Xanthophyll accumulation in the human retina during supplementation with lutein or zeaxanthin - the LUXEA (Lutein Xanthophyll Eye Accumulation) study, *Arch Biochem Biophys* 458, 128-135. 11. Buchelli, P., Vidal, K., Shen, L., Gu, Z., Zhang, C., Miller, L. E., and Wang, J. (2011) Goji berry effects on macular characteristics and plasma antioxidant levels, *Optom Vis Sci* 88, 257-262. 12. Johnson, E. J., Maras, J. E., Rasmussen, H. M., and Tucker, K. L. (2010) Intake of lutein and zeaxanthin differ with age, sex, and ethnicity, *J Am Diet Assoc* 110, 1357-1362. 13. Seddon, J. M., Ajani, U. A., Sperduto, R. D., Hiller, R., Blair, N., Burton, T. C., Farber, M. D., Gragoudas, E. S., Haller, J., Miller, D. T., and et al. (1994) Dietary carotenoids, vitamins A, C, and E, and advanced age-related macular degeneration. Eye Disease Case-Control Study Group, *JAMA* 272, 1413-1420. 14. Chasan-Taber, L., Willett, W. C., Seddon, J. M., Stampfer, M. J., Rosner, B., Colditz, G. A., Speizer, F. E., and Hankinson, S. E. (1999) A prospective study of carotenoid and vitamin A intakes and risk of cataract extraction in US women, *Am J Clin Nutr* 70, 509-516. 15. Brown, L., Rimm, E. B., Seddon, J. M., Giovannucci, E. L., Chasan-Taber, L., Spiegelman, D., Willett, W. C., and Hankinson, S. E. (1999) A prospective study of carotenoid intake and risk of cataract extraction in US men, *Am J Clin Nutr* 70, 517-524. 16. SanGiovanni, J. P., Chew, E. Y., Clemons, T. E., Ferris, F. L., 3rd, Gensler, G., Lindblad, A. S., Milton, R. C., Seddon, J. M., and Sperduto, R. D. (2007) The relationship of dietary carotenoid and vitamin A, E, and C intake with age-related macular degeneration in a case-control study: AREDS Report No. 22, *Arch Ophthalmol* 125, 1225-1232. 17. Wingerath, T., Stahl, W., and Sies, H. (1995) beta-Cryptoxanthin selectively increases in human chylomicrons upon ingestion of tangerine concentrate rich in beta-cryptoxanthin esters, *Arch Biochem Biophys* 324, 385-390. 18. Emmick, T. E., and Maci, S. (KHTL-017-109) Supplemental Meso-Zeaxanthin - Not What Nature Intended. 19. Connolly, E. E., Beatty, S., Thurnham, D. I., Loughman, J., Howard, A. N., Stack, J., and Nolan, J. M. (2010) Augmentation of macular pigment following supplementation with all three macular carotenoids: an exploratory study, *Curr Eye Res* 35, 335-351. 20. Meagher, K. A., Thurnham, D. I., Beatty, S., Howard, A. N., Connolly, E., Cummins, W., and Nolan, J. M. (2012) Serum response to supplemental macular carotenoids in subjects with and without age-related macular degeneration, *Br J Nutr* 112, 1-12. 21. Thurnham, D. I., Tremel, A., and Howard, A. N. (2008) A supplementation study in human subjects with a combination of meso-zeaxanthin, (3R,3'R)-zeaxanthin and (3R,3'R,6'R)-lutein, *Br J Nutr* 100, 1307-1314. 22. National Institutes of Health National Eye Institute. (2013) NIH study provides clarity on supplements for protection against blinding eye disease, Press Release <http://www.nei.nih.gov/news/pressreleases/050513.asp>.

FloraGLO
LUTEIN

zeadone
zeaxanthin

floraglo.com

KEMIN™
INSPIRED MOLECULAR SOLUTIONS™

Kemin Foods, L.C.
© Kemin Industries, Inc. and its group of companies 2013. All rights reserved.
®™ Trademarks of Kemin Industries, Inc., U.S.A.
KHMKT2-022-000317 Rev Level: 0 Rev Date: 130620HR

North America +1-515-248-4000 Toll Free 866-536-4666
Asia +81-3-3239-2521
Europe +351-214-157-500
Central/South America +55-11-2283-0369
info@kemin.com | www.kemin.com