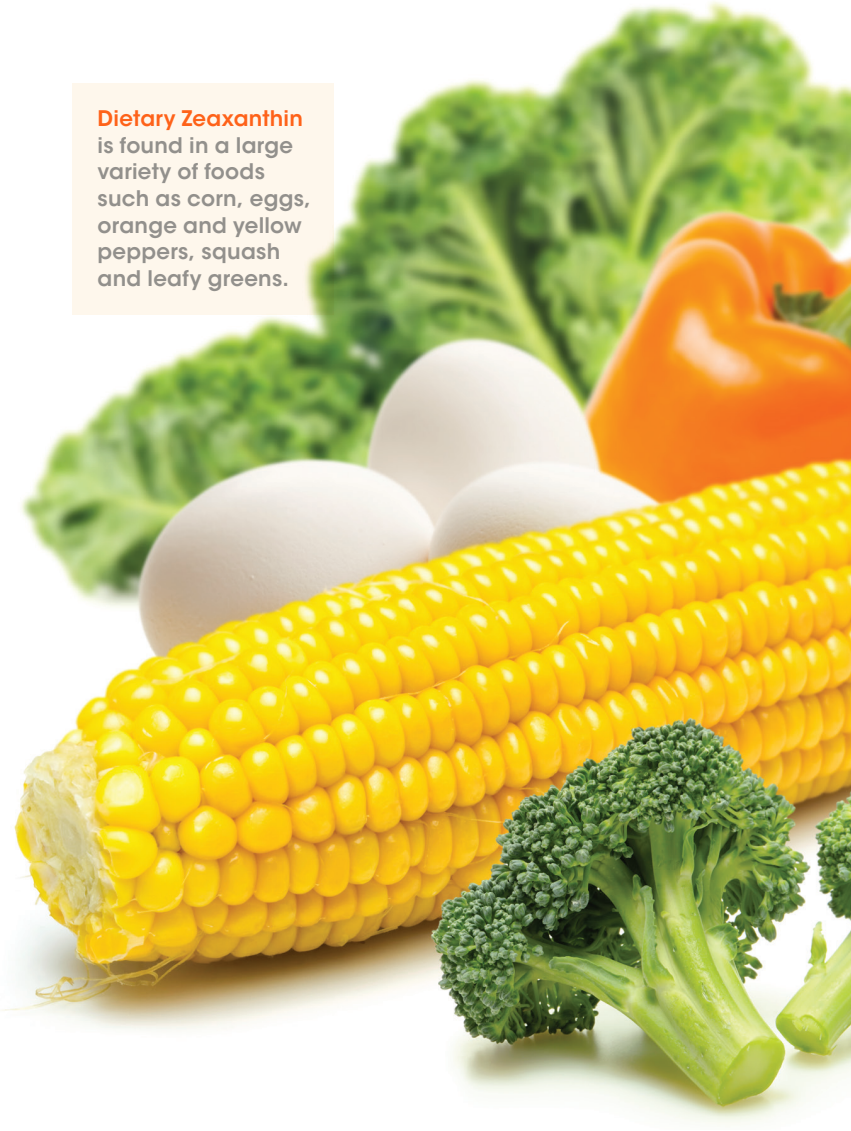
zeaxanthin
the way nature intended

Not all zeaxanthin is the same. Some products are misrepresented as containing dietary zeaxanthin, when in fact, they are purposefully formulated to contain a zeaxanthin stereoisomer—3R, 3'S-*meso*-zeaxanthin. *Meso*-zeaxanthin, sometimes confusingly referenced on labeling as "zeaxanthin isomers", is quite different than dietary zeaxanthin and is not a suitable replacement.

Meso-Zeaxanthin Isn't Found Naturally in the Diet—for a Reason

Our eyes are naturally protected by macular pigment, the majority of which is made up of two dietary nutrients, zeaxanthin and lutein. The body absorbs these nutrients through our diet and selectively deposits them in the macula. Although *meso*-zeaxanthin is also found in macular pigment, research has demonstrated that it is a result of the body's natural conversion of lutein.[1] Unlike dietary zeaxanthin and lutein which are abundant in our diets, *meso*-zeaxanthin is not found in any conventional dietary source.[2]

Supplemental *meso*-zeaxanthin is synthetically made from lutein using high heat and a strong alkaline environment.[3]



Dietary Zeaxanthin is found in a large variety of foods such as corn, eggs, orange and yellow peppers, squash and leafy greens.

Meso-Zeaxanthin Science Is in its Infancy

Hundreds of studies have shown that dietary zeaxanthin and lutein help keep our eyes healthy, improve visual performance and reduce the risk of certain eye conditions as we age.[4, 5]

There is no established body of "level one" evidence to support the efficacy of *meso*-zeaxanthin.

However, the evidence to support the efficacy of supplemental *meso*-zeaxanthin is lacking. To date, there has been no research on the eye health benefits of using supplemental *meso*-zeaxanthin alone without the presence of dietary zeaxanthin and lutein. This makes it hard to attribute any study effect to *meso*-zeaxanthin alone.

Additionally, research shows that supplemental *meso*-zeaxanthin may actually compete with zeaxanthin and lutein absorption, keeping them from reaching the macula where they are critical to eye health.[6-8]

Choose dietary zeaxanthin and lutein —the forms clinically proven to deliver eye health benefits, the way nature intended.

The Evidence:

Dietary Zeaxanthin and Lutein Compared to *Meso*-Zeaxanthin

	Dietary Zeaxanthin and Lutein	*Meso*-Zeaxanthin (in combination with lutein and zeaxanthin)
Years of clinical study	30*	8
Total number of published human clinical studies	64*	8
Trials with different investigators†	✓	
Found naturally in the diet	✓	
Found in the macula	✓	✓
Converted by the body from lutein in the macula		✓
Found in the brain, skin & breast milk	✓	
Protective antioxidant & blue light filter	✓	✓
Higher rate of serum absorption	✓	
Form that is clinically proven to reduce the progression of age-related macular degeneration (AMD)[9]	✓	
Included in AREDS2	✓	
Positive opinion on safety from JECFA+	✓	
New dietary ingredient notification filed & acknowleged by the FDA (zeaxanthin)	✓	
Can be sourced from plants	✓	

*Based on a biannual PubMed search analysis as of January 2014[10]. **Counts only include studies using FloraGLO brand Lutein.** 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

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1. Johnson, E.J., et. al. (2005) Nutritional manipulation of primate retinas, III: effects of lutein or zeaxanthin supplementation on adipose tissue and retina of xanthophyll-free monkeys. Invest Ophthalmol Vis Sci 46, 692-702. **2.** Rasmussen, H., et al. (2012) Lutein, zeaxanthin, meso-zeaxanthin content in egg yolk and their absence in fish and seafood. J Food Composition Analysis 27, 139–144. **3.** Montoya-Olvera, R., et al. (2003) Process to obtain xanthophyll concentrates of high purity, (Office, U.S.P, Ed.) Industrial Organica S.A. DE C.V. (Monterrey, MX), United States. **4.** Alexander, D.A., and Emmick, T.E. Human Clinical Trials with FloraGLO Lutein, TL-17-183. **5.** Emmick, T.E., and Alexander, D.A. Why Dietary Zeaxanthin? – A Scientific Summary, TL-017-113. **6.** Connolly, E. E., et al. (2010) Augmentation of macular pigment following supplementation with all three macular carotenoids: an exploratory study, Curr Eye Res 35, 335-351. **7.** Meagher, K. A., et al. (2013) Serum response to supplemental macular carotenoids in subjects with and without age-related macular degeneration, Br J Nutr 110, 289-300. **8.** Thurnham, D. I., et al. (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. **9.** The 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 309, 2005-2015. **10.** Kemin Foods L.C. Internal Memorandum based on PubMed Search.

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Brought to you by Kemin—the makers of FloraGLO® Lutein, the most clinically researched lutein brand worldwide[10], and ZeaONE™ Zeaxanthin, a new dietary free-form of zeaxanthin naturally sourced from marigolds.

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