

The Carotenoid Lutein Protects Against Eye Disorder of the Aging

by Jill Collins

Out of about 700 known carotenoids---a subset of the antioxidant group---only between 40 and 50 are present in the average American's diet; **lutein** is one of them, as reported in a Kemin Foods, L.C., Des Moines, Iowa, news release. Out of a total of six carotenoids found in significant concentrations in food, lutein is by far the most prevalent in vegetables such as spinach, kale and collard greens. It is an even more powerful ingredient in the marigold flower, with its petals containing 20 times higher concentrations of **lutein** than spinach. **Lutein** also is one of two of the most effective carotenoid antioxidants contained in human serum.

Lutein has been around for many years. However, according to Ken Siletski, vice president/general manager of H. Reisman Corp., Orange, N.J., "More recently, it has been shown scientifically to prevent Age-Related Macular Degeneration (AMD) and be very (effective) in the anticancer field." AMD is the number one cause of irreversible blindness, according to the January issue of Tufts University's Diet and Nutrition Letter. It usually becomes a concern in people over the age of 60 and affects one out of three American adults over the age of 75.

Human's greatest visual activity takes place in the middle of the retina in a depression called the fovea. This foveal depression contains a large amount of yellow, or macular, pigments, formed by the only two carotenoids found in the eye: **lutein** and its isomer, zeaxanthin. This entire region of the eye, in clinical slang, is termed the macula, in which zeaxanthin is present only in moderate amounts. According to Joanne Curran-Celentano, Ph.D., of the University of New Hampshire, the macular pigment is reported to "absorb short-wave light, quench free radicals and reduce chromatic aberration."

Signs of AMD begin with a general blurring of vision due to the degeneration of the retina and the retinal pigment epithelium (RPE). Scientific reasoning behind this degeneration of vision is as yet unknown. However, according to the Tufts University newsletter, "Scientists speculate that by accumulating in the retina and filtering out certain types of rays of light that may damage it, [lutein and zeaxanthin] may leave both the retina and the

macula less vulnerable to the degeneration that leads to AMD." As D. Max Snodderly mentions in his 1995 article, "Evidence for protection against AMD by carotenoids and antioxidant vitamins," factors most probably contributing to oxidative processes include cigarette smoking, sunlight exposure and low ocular melanin. The factors related to the pathologic processes of AMD itself include scar formation, accumulation of cellular debris and the degeneration of photoreceptors.

Several studies examining the effects of a diet rich in lutein on AMD have been performed. The following results, reported by Rodney L. Ausich, Ph.D. of Kemin Foods in "Increasing Importance of **Lutein** Diets," stem from a series of three papers beginning in December of 1992:

In the first paper the researchers found for the first time an association between consumption of carotenoids, the level of carotenoids in the serum and a lower incidence of muscular degeneration. This paper did not examine or differentiate among the different carotenoids found in the serum, but rather combined all of the carotenoids into a 'carotenoid' class of compounds. In the second paper the researchers analyzed specific carotenoids that were associated with a reduced risk of macular degeneration. In this study, these researchers found for the first time that a high level of lutein in the serum was significantly correlated with a reduced risk of macular degeneration. The last paper in this series was published by Johanna Seddon and coworkers at Harvard university. In this study, the researchers further defined the role of lutein to lower the risk of macular degeneration. They found that consumption of six mg per day of lutein lead to a 43 percent lower risk of macular degeneration compared to those individuals who did not consume this level of lutein. They also found that there was no positive relationship between consumption of beta carotene, lycopene of other carotenoids to lower the risk of macular degeneration.