Lutein – An Opportunity For Improved Eye Health

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Dr. Andrew Shao is among few scientists, and even fewer clinicians, who appreciate the weight of evidence and emerging potential for improved eye health and vision in the aging industrialized population centers of the world. In his article: The Role of Lutein in Human Health, Dr. Shao devotes his review to a neglected dihydroxy carotenoid that plays both preventative and therapeutic roles in optimizing eye health. Lutein as well, shows early promise in cardiovascular health and myriad cancers.

I have devoted a good part of my career to the study of Age Related Macular Degeneration (ARMD). It remains the leading cause of untreated vision loss in aging western Caucasian societies, accounting for 45% of all visual disability in the US.1,2 ARMD is three times more common than glaucoma. Unlike glaucoma, however, there is no medical treatment for the most common dry atrophic form of the disease, which affects 90% of all visually disabled people. ARMD is a bilateral disease, gradually robbing a person of critical central visual function – the vision each of us requires to read or drive a car. Increasing age is associated with increasing prevalence of ARMD in all studies,1-4 with approximately 60% of 90-year-olds and above affected.5 ARMD has increased in Britain in the last 60 years, ruling out genetic predisposition as the primary etiologic factor.4 It has begun to emerge in Japan as the Japanese shift to a more westernized diet.3 Dark green leafy vegetables, a major food source of lutein and other important nutrients, are consumed on a limited basis in the western diet. While reduced consumption of lutein is specifically associated epidemiologically with both cataract and ARMD, for perspective, there are more than a dozen nutrients associated with ocular health.7

ARMD is a complex disorder involving genetic, cardiovascular and environmental components. From a genetic standpoint, the disease is of multifactorial etiology with multiple genes modifying susceptibility to exogenous interrelated factors.8 In 1993, we hypothesized that ARMD might, in part, be a nutrition responsive disorder.9 In 1996 we demonstrated in a Department of Veterans Affairs double-blind, randomized, multicenter prospective clinical trial, that atrophic ARMD could be stabilized with nutritional intervention in the form of broad-spectrum antioxidants (sans lutein).10,11 Although vision stabilized, no study patients actually improved. The situation changed dramatically in early 1999 when we published preliminary pilot data demonstrating improvement in visual function in the majority of ARMD patients placed on either increased dark green leafy vegetables (lutein-rich spinach), or lutein supplements.12 Our unpublished case reports since 1999 have been equally striking. With a proper evaluation system, based upon both retinal physiology/pathophysiology and physiological optics,13 it now appears feasible to reverse or regenerate visual function in atrophic ARMD patients. Results of a 90-patient prospective, randomized, double-masked, placebo controlled lutein/lutein-antioxidant–ARMD study awaits peer review.14

It has been said that the eyes mirror health. In his excellent review, Dr. Shao raises the exciting prospect that macular pigment density may serve as an in vivo surrogate...
marker of systemic carotenoid status and ocular health. Of course, establishing a nutrient to be essential (i.e. a vitamin) requires proving causality in depletion/repletion experiments. Although, the Malinow et al. depletion studies were unable to assess visual acuity, the retinal appearance of monkeys deprived of lutein is identical in appearance to that of humans with atrophic ARMD, the most common ARMD subtype we see in the clinic. Add to this the epidemiological, biologic structure/function, and emerging prospective clinical repletion data, and it all suggests that lutein is positioned to have an important, if not essential role, in 21st-century eye care.

REFERENCES