

# Macular pigment: influences on visual acuity and visibility

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## **Abstract**

There is increasing evidence that the macular pigment (MP) carotenoids lutein (L) and zeaxanthin (Z) protect the retina and lens from age-related loss. As a result, the use of L and Z supplements has increased dramatically in recent years. An increasing number of reports have suggested that L and Z supplementation (and increased MP density) are related to improved visual performance in normal subjects and patients with retinal and lenticular disease. These improvements in vision could be due either to changes in the underlying biology and/or optical changes. The optical mechanisms, i.e., preferential absorption of short-wave light, underlying these putative improvements in vision, however, have not been properly evaluated. Two major hypotheses are discussed. The *acuity hypothesis* posits that MP could improve visual function by reducing the effects of chromatic aberration. The *visibility hypothesis* is based on the idea that MP may improve vision through the atmosphere by preferentially absorbing blue haze (short-wave dominant air light that produces a veiling luminance when viewing objects at a distance).

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