

Vision and Nutrition: Lutein and Zeaxanthin

Lutein and zeaxanthin are dietary carotenoids that preferentially accumulate in the macular region of the retina. Together with meso-zeaxanthin, a conversion product of lutein in the macula, they form the macular pigment. Lutein is also the predominant carotenoid in human brain tissue and lutein status is associated with cognitive function in adults (1). Macular pigment carotenoids (lutein, meso-zeaxanthin, and zeaxanthin combined) in the retina have been significantly related to the combined concentrations of lutein and zeaxanthin in the occipital cortex of the brain. When analyzed separately, only retinal lutein (plus meso-zeaxanthin), not zeaxanthin, was significantly related to lutein in the occipital cortex. No correlations were observed with lutein and zeaxanthin in the hippocampus, the area of the brain that has been studied with regard to memory. Total macular pigment density measured via non-invasive, psychophysical techniques are a biomarker of brain lutein and zeaxanthin status in clinical studies.

1. Vishwanathan R, Schalch W, Johnson EJ. Macular pigment carotenoids in the retina and occipital cortex are related in humans. *Nutr Neurosci*. 2016;19(3):95-101.