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## Macular pigment in donor eyes with and without AMD: a case-control study.

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### Abstract

**PURPOSE:** To determine whether there is an association between the density of macular pigment in the human retina and the risk of age-related macular degeneration (AMD).

**METHODS:** Retinas from 56 donors with AMD and 56 controls were cut into three concentric regions centered on the fovea. The inner, medial, and outer regions covered the visual angles 0 degrees to 5 degrees, 5 degrees to 19 degrees, and 19 degrees to 38 degrees, respectively. The amounts of lutein (L) and zeaxanthin (Z) extracted from each tissue sample were determined by high-performance liquid chromatography.

**RESULTS:** L and Z levels in all three concentric regions were less, on average, for the AMD donors than for the controls. The differences decreased in magnitude from the inner to medial to outer regions. The lower levels found in the inner and medial regions for AMD donors may be attributable, in part, to the disease. Comparisons between AMD donors and controls using the outer (peripheral) region were considered more reliable. For this region, logistic regression analysis indicated that those in the highest quartile of L and Z level had an 82% lower risk for AMD compared with those in the lowest quartile (age- and sex-adjusted odds ratio = 0.18, 95% confidence interval = 0.05-0.64).

**CONCLUSIONS:** The results are consistent with a theoretical model that proposes an inverse association between risk of AMD and the amounts of L and Z in the retina. The results are inconsistent with a model that attributes a loss of L and Z in the retina to the destructive effects of AMD.

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