Consuming a buttermilk drink containing lutein-enriched egg-yolk daily for 1 year improves macular pigment optical density and visual acuity in subjects with early signs of age-related macular degeneration

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Published in:
Investigative Ophthalmology and Visual Science

Published: 01/06/2015

Citation for published version (APA):
Abstract

**Purpose:** Lutein has been shown to be beneficial in maintaining visual function in age-related macular degeneration (AMD). A dairy beverage has been developed based on lutein-enriched egg yolks and buttermilk. The eggs have been enriched in lutein via the feed of laying hens. The primary aim of this study was to assess the effects of 1-year daily consumption of this dairy drink containing lutein-enriched egg-yolks on macular pigment optical density (MPOD) and visual scores in subjects with early AMD. Also, plasma lutein concentrations, and serum lipids and lipoproteins were measured.

**Methods:** One hundred and one subjects were recruited to participate in this one-year, double blind, placebo-controlled intervention trial in subjects with early signs of AMD. Subjects in the lutein group consumed the dairy drink containing 1.4 mg lutein daily. MPOD using heterochromatic flicker photometry, best corrected visual acuity (BCVA), and dark adaptation were measured at the start of the study, after 6 months and after 12 months of consuming either the placebo or lutein drink. Plasma lutein concentration was assessed at baseline and at the end of the study.

**Results:** In the lutein group plasma lutein concentration increased significantly from 205 ng/ml at baseline to 399 ng/ml at study end (p<0.001). MPOD increased significantly from 0.45 to 0.52 (p<0.001) and BCVA increased significantly from -0.04 to -0.09 (LogMar, p=0.004). We found no changes in the placebo group. Differences in dark adaptation between both groups were not significant.
**Conclusions:** Daily consumption of a dairy drink containing lutein-enriched egg-yolks for one year improves plasma lutein concentration, MPOD and visual acuity in subjects with early signs of age-related macular degeneration.

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