

**Measurement of carotenoids, retinoids, and tocopherols in human lenses.**

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**PURPOSE.** To determine the levels of carotenoids, retinoids, and tocopherols in normal and cataractous human lenses. **METHODS.** Concentrations of carotenoids, retinoids, and tocopherols were measured by high-performance liquid chromatography (HPLC) in 12 American normal lenses, 9 American cataractous lenses, and 10 Indian cataractous lenses. **RESULTS.** On a per gram wet weight of tissue basis, human lenses contained 11 to 25 ng xanthophylls (lutein and zeaxanthin), 31 to 50 ng retinol, 21 to 25 ng retinyl palmitate, 1573 to 2550 ng alpha-tocopherol, and 257 to 501 ng gamma-tocopherol. Concentrations of lutein, zeaxanthin, and retinol were significantly higher in Indian cataractous lenses than in American normal or cataractous lenses. There were no differences in the lutein-zeaxanthin, retinoid, or alpha-tocopherol contents between American normal lenses and American cataractous lenses. The range of ratios of lutein to zeaxanthin in human lenses was 1.6 to 2.2. The mean age of the Indian lens donors was 20 years younger than the American lens donors. Comparisons using contralateral lenses indicated that there was significant interindividual variance in human lens concentrations of xanthophylls, retinoids, and tocopherols. beta-carotene and lycopene, major carotenoids in human serum and other tissues, were not detected in human lenses.

**CONCLUSIONS.** Xanthophylls (lutein and zeaxanthin) are the only carotenoids detected in human lens. Retinol, retinyl palmitate, and alpha- and gamma-tocopherols also are present in human lens. Determinants of lens concentration of nutrients are not defined, but dietary factors are likely to be important.

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**Xantofilie (Luteina e zeaxantina) sono i soli carotenoidi individuati nel cristallino. Anche retinolo, palmitato di retinale, alfa e gamma-tocoferolo sono presenti nel cristallino.**

**I determinanti per le concentrazioni di nutrienti nel cristallino non sono definiti, ma i fattori dietetici giocano un ruolo di fondamentale importanza.**