

The Health Benefits of Fruits and Vegetables
A Scientific Overview for Health Professionals

A review of the literature from 1999 to 2001 by Dianne Hyson, Ph.D., M.S., R.D.
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Cataracts

A unique, relatively new protective role for fruits and vegetables is in cataract prevention. Cataracts occur when the lens of the eye is unable to function due to opacities. Lens opacities develop when proteins in the eye are damaged by photo-oxidation; these damaged proteins build up, clump, and precipitate. The result is diminished vision due to cloudiness and discoloration, and if left untreated, eventual blindness. First line defense systems protecting the initial oxidative stress are believed to be antioxidants such as vitamin C and carotenoids, found widely in fruits and vegetables.

Cataracts are one of the world's major causes of blindness, with an estimated 50 million people in the world being blind due to them (119). Cataracts are most common among the elderly. Occurrence in the U.S. increases from 5% at age 65 years to 40% for persons 75 years and older (120). Health care costs associated with cataracts among the elderly are significant. In the United States, age-related cataracts cost \$5 billion/year, which is the largest single item in Medicare expenditures, and accounts for 1.2 million cataract extractions per year (121).

It is estimated that over half of cataract extractions and associated costs would be eliminated if cataracts could be delayed ten years. Substantial evidence suggests that consuming high levels of antioxidants - vitamin C and carotenoids - are associated with delayed development of the various forms of cataracts. There is growing epidemiological evidence that that same beneficial relationship exists for fruits and vegetables.

The case for a protective role of fruits and vegetable on cataract development begins with case-control studies, such as the one by Jacques and Chylack (122). In this first, and perhaps most important study, high fruit and vegetable intake was associated with lower risk of any form of cataracts. These investigators found a significant fivefold reduction in relative risk for cataracts among consumers of more than 1.5 daily servings of fruits, vegetables, or both fruits and vegetables. Mares-Perlman and associates followed with a cohort study. In this study of middle-aged and older residents of Beaver Dam, Wis., dietary sources of fiber and carotenoids were associated with lower risk for cataracts, particularly in men (123). However, a recent cohort study by Hankinson and colleagues, of women 45 to 67 years of age, found high dietary carotenoid intake associated with lower risk for cataract extraction (124). High consumers of carotenoids were noted to have a 39% lower risk for cataract extraction compared with low consumers. Most recently, a Harvard based study of U.S. male health professionals found beta-carotene rich foods (such as spinach, broccoli, corn, and tomato sauce) associated with a significantly lower risk of cataracts (125).

As the science base continues to strengthen, the data presently available were sufficiently convincing for Taylor and Colleagues to conclude in the American Journal of Clinical Nutrition that "optimizing nutriture, including diets rich in fruits and vegetables, may provide the least costly and most practical means to delay cataract"(120).

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