

## Eating Bright-Colored Fruits and Vegetables May Prevent or Delay Amyotrophic Lateral Sclerosis

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*Jan. 29, 2013* — New research suggests that increased consumption of foods containing colorful carotenoids, particularly beta-carotene and lutein, may prevent or delay the onset of amyotrophic lateral sclerosis (ALS). The study, published by Wiley in *Annals of Neurology*, a journal of the American Neurological Association and Child Neurology Society, found that diets high in lycopene, beta-cryptoxanthin, and vitamin C did not reduce ALS risk. Carotenoids give fruits and vegetables their bright orange, red, or yellow colors, and are a source of dietary vitamin A. Prior studies report that oxidative stress plays a role in the development of ALS. Further studies have shown that individuals with high intake of antioxidants, such as vitamin E, have a reduced ALS risk. Because vitamin C or carotenoids are also antioxidants, researchers examined their relation to ALS risk. According to the National Institutes of Neurological Disorders and Stroke (NINDS) roughly 20,000 to 30,000 Americans have ALS—also known as Lou Gehrig’s disease—and another 5,000 patients are diagnosed annually with the disease. ALS is a progressive neurological disease that attacks nerve cells (neurons) in the brain and spinal cord, which control voluntary muscles. As the upper and lower motor neurons degenerate, the muscles they control gradually weaken and waste away, leading to paralysis. “ALS is a devastating degenerative disease that generally develops between the ages of 40 and 70, and affects more men than women,” said senior author Dr. Alberto Ascherio, Professor of Epidemiology and Nutrition at Harvard School of Public Health in Boston, Mass. “Understanding the impact of food consumption on ALS development is important. Our study is one of the largest to date to examine the role of dietary antioxidants in preventing ALS.” Using data from five prospective groups: the National Institutes of Health

(NIH)—AARP Diet and Health Study, the Cancer Prevention Study II-Nutrition Cohort, the Multiethnic Cohort, the Health Professionals Follow-up Study, and the Nurses' Health Study, researchers investigated more than one million participants for the present study. A total of 1093 ALS cases were identified after excluding subjects with unlikely food consumption. The team found that a greater total carotenoid intake was linked to reduced risk of ALS. Individuals who consumed more carotenoids in their diets were more likely to exercise, have an advanced degree, have higher vitamin C consumption, and take vitamin C and E supplements. Furthermore, subjects with diets high in beta-carotene and lutein—found in dark green vegetables—had a lower risk ALS risk. Researchers did not find that lycopene, beta-cryptoxanthin, and vitamin C reduced the risk of ALS. Long-term vitamin C supplement intake was also not associated with lower ALS risk. Dr. Ascherio concludes, “Our findings suggest that consuming carotenoid-rich foods may help prevent or delay the onset of ALS. Further food-based analyses are needed to examine the impact of dietary nutrients on ALS.”

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**Journal Reference:**

Kathryn C Fitzgerald, Éilis J O'Reilly, Elinor Fondell, Guido J Falcone, Marjorie L McCullough, Yikyung Park, Laurence N Kolonel, Alberto Ascherio. **Intakes of vitamin C and carotenoids and risk of amyotrophic lateral sclerosis: Pooled results from 5 cohort studies.** *Annals of Neurology*, 2012; DOI: [10.1002/ana.23820](https://doi.org/10.1002/ana.23820)