

Vitamin E From Food Sources - Your Best Defense Against Alzheimer's?

Editorial Staff

Vitamin E is one of many popular dietary supplements, but taking a supplement containing vitamin E may not be the best way to receive all of its benefits. A new study shows that eating foods rich in vitamin E may be effective in preventing the occurrence of Alzheimer's disease - and more effective than taking vitamin E supplements alone.

Vitamin E is one of a handful of vitamins that act as an antioxidant in the body. Previous studies have shown that vitamin E helps to neutralize free radicals and prevents them from causing cellular damage. It also inhibits the oxidation of LDL cholesterol, or "bad" cholesterol, which may reduce the risk of buildup of plaque in the arteries. Because of its antioxidative properties, the American Psychiatric Association's clinical practice guidelines recommend that vitamin E be considered for use in patients with moderate Alzheimer's disease. Large doses of vitamin E are also included in the Alzheimer's disease guidelines published by the American Academy of Neurology.

Most people associate vitamin E with a chemical called alpha-tocopherol; in fact, most vitamin E supplements sold in the U.S. usually consist of alpha-tocopherol only. However, vitamin E is composed of four types of tocopherols (alpha, beta, gamma and delta) and accompanying compounds called tocotrienols. As a result, scientists believe that another tocopherol (or a combination of tocopherols) may actually be responsible for some of vitamin E's antioxidative properties.

The Study

Published in the February 2005 issue of the *American Journal of Clinical Nutrition*, the study tracked more than 1,000 individuals, ages 65 and older and living in the Chicago area, for six years. At the beginning of the study, each subject participated in an interview that measured their cognitive skills, along with two follow-up interviews at later dates. In addition, random samples of the population were evaluated approximately every three years to determine whether they showed any signs of Alzheimer's disease.

All of the participants also completed a self-administered food questionnaire an average of 1.2 years from the original cognitive interview, and 1.2 years from the date that they were last determined to be free of Alzheimer's disease. The questionnaire measured usual food intake over the previous year of 139 different foods and vitamin supplements, and evaluated general dietary behaviors.

Over the course of the study, 162 people developed Alzheimer's disease. After analyzing the food intake questionnaires, the scientists determined that the higher intake of vitamin E from food, the less likely a person was to be diagnosed with Alzheimer's disease. For every 5 milligram per day increase in overall vitamin E intake, there was a 26 percent reduction in the likeliness of contracting Alzheimer's disease.

Intake of particular tocopherols was associated with reduced Alzheimer's risks as well. For every 5

mg/day increase in alpha-tocopherol, the relative risk of Alzheimer's disease decreased by 34 percent; for gamma-tocopherol, 40 percent; and for delta-tocopherol (at an increase of one mg/day), 25 percent. There was no reduced risk associated with beta-tocopherol.

Food Sources of Vitamin E	Milligrams of alpha-tocopherol (per serving)
Wheat germ oil, 1 tablespoon (tbsp)	20.3
Almonds, dry roasted, 1 oz.	7.4
Sunflower seed kernels, dry roasted, 1 oz.	6.0
Sunflower oil, over 60% linoleic, 1 tbsp	5.6
Safflower oil, over 70% oleic, 1 tbsp	4.6
Hazelnuts, dry roasted, 1 ounce	4.3
Peanut butter, smooth style, vitamin and mineral fortified, 2 tbsp	4.2
Peanuts, dry roasted, 1 oz.	2.2
Corn oil (salad or vegetable oil), 1 tbsp	1.9
Spinach, frozen, chopped, boiled, ½ cup	1.6
Broccoli, frozen, chopped, boiled, ½ cup	1.2
Soybean oil, 1 tbsp	1.3
Kiwi, 1 medium fruit without skin	1.1
Mango, raw, without refuse, ½ cup sliced	0.9
Spinach, raw, 1 cup	0.6

SOURCE: U.S. Department of Agriculture, Agricultural Research Service, 2004. USDA National Nutrient Database for Standard Reference, Release 16-1. Nutrient Data Laboratory Home Page: www.nal.usda.gov/fnic/foodcomp.

In addition, high intake of vitamin E from food was significantly associated with a slower decline in subjects' cognitive scores during the study period. Of the four forms of tocopherol, higher food intakes of alpha-tocopherol and gamma-tocopherol were "significantly associated" with slower rates of cognitive decline. Based on these results, the authors drew an analysis comparing two 75-year-old white females, both of whom had 12 years of education and median intakes of vitamin C and vitamin E from food. If one of the women consumed five milligrams more of vitamin E from food daily than her cohort, the woman's rate of cognitive decline would have been 8.7 percent slower per year. An increase in alpha-tocopherol would slow cognitive decline by 14.7 percent; an increase in gamma-tocopherol would slow cognitive decline by 11.7 percent.

"The results suggest that various tocopherol forms rather than alpha-tocopherol alone may be important in the vitamin E protective association with Alzheimer's disease," the authors wrote. They added, "Additional testing through randomized controlled clinical trials appears warranted to more firmly establish the effects of various tocopherol forms on the prevention of age-related cognitive decline and Alzheimer's disease."

Food Sources of Vitamin E

Vitamin E is present in a wide range of whole foods."Good sources of vitamin E include vegetable

oils, sweet potatoes, avocados, nuts, sunflower seeds and soybeans. Smaller amounts are found in egg yolks and green leafy vegetables. Alpha-tocopherol is more abundant in sunflower and wheat germ oils, whereas corn and soybean oils have higher levels of gamma-tocopherol. Alpha-tocopherol is considered the most biologically active form of vitamin E, and the most potent antioxidant, while gamma-tocopherol is believed to be the more potent anti-inflammatory, and a better scavenger of the reactive nitrogen species found in the brains of Alzheimer's patients.

Reference

- Morris MC, Evans DA, Tangney CC, et al. Relation of the tocopherol forms to incident Alzheimer disease and to cognitive change. *American Journal of Clinical Nutrition* 2005;81:508-14.