

# The NUTRITION REPORTER™

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## Natural Vitamin E Supplements Slow the Early Stages of Coronary Heart Disease

Numerous studies have now confirmed that supplements of vitamin E reduce the risk and incidence of coronary heart disease. The vitamin works in a number of ways, such as an anti-coagulant and by preventing the oxidation of low-density lipoprotein (LDL) form of cholesterol.

Now, in what may be one of the most significant vitamin E studies to date, Ishwarlal "Kenny" Jialal, M.D., and Sridevi Devaraj, PhD, of the University of Texas Southwestern Medical Center, Dallas, have shown that vitamin E prevents the formation of plaque-producing "foam cells."

The atherosclerotic process begins when a type of white blood cell, called a monocyte, begins absorbing oxidized LDL from the bloodstream. In time, these LDL-laden monocytes become waxy foam cells and begin infiltrating the layer of endothelial cells lining the artery walls.

Next, these foam cells start sticking to the artery and releasing free radicals and interleukin 1 $\beta$  (IL 1 $\beta$ ), a substance that further promotes the formation of cholesterol-containing plaque. The foam cells get larger and become trapped in the artery wall. As they accumulate, they turn into what most doctors refer to as cholesterol-containing plaque.

Jialal and Devaraj studied monocyte activity in the blood of 21 healthy subjects before and after they took 1,200 IU of natural vitamin E (d-alpha tocopheryl acetate) daily for eight weeks. The vitamin E supplements decreased the amount of free radicals released by the monocytes by half and IL 1 $\beta$  by 80 percent. The vitamin E also decreased LDL oxidation by 40 percent and monocyte adhesion to artery walls by 20 to 35 percent, according to Jialal and Devaraj's article in the *Journal of Clinical Investigation* (Aug 1996;98:756-63). The journal is considered one of the top five in the world.

In another study, Jialal and Cindy J. Fuller, PhD, now an assistant professor at the University of North Carolina, Greensboro, reported that high doses of natural vitamin E also reduced the risk of heart disease among diabetics. Diabetics are prone to premature heart disease, possibly because they are under exceptional oxidative stress and have higher levels of oxidized LDL.

For eight weeks, Jialal and Fuller gave 28 Type I and

Type II diabetics 1,200 IU of vitamin E daily. The diabetics benefited in two ways. First, when the diabetics took vitamin E, their LDL took 41 percent longer to oxidize, meaning that it was more resistant to oxidation. Second, when the LDL did oxidize, there was a 24 percent decrease in the rate of LDL oxidation, according to their article in *American Journal of Clinical Nutrition*, 1996;63:753-9).

"In other words, vitamin E protected LDL by both increasing the time it took to oxidize and by slowing the speed of oxidation once it began," Fuller told THE NUTRITION REPORTER.

The vitamin E had no effect on protein glycation, the binding of glucose to protein, which is also a marker of poor diabetic control and aging. Other studies have shown that vitamin E does reduce protein glycation.

It's worth noting, by the way, that the "bad" LDL form of cholesterol is not inherently bad. It is essential for transporting fat-soluble vitamins (A, D, E, K) through the bloodstream. □

### St. John's Wort Eases Depression, Selenium Linked to Mood

The herb St. John's wort (*Hypericum perforatum*) is an old German folk remedy for depression—and one that is still prescribed almost 3 million times a year in that country. A recent meta, or collective, analysis of 23 studies found that extracts of hypericum, apparently the active compound in St. John's wort, were "significantly superior" to dummy pills and often better than pharmaceutical drugs in relieving depression.

Klaus Linde, PhD, of the Ludwig-Maximilians University in Munich analyzed the responses of 1,757 patients with mild or moderately severe depression, a condition that affects about 17 percent of Americans at least once in their lifetimes. Thirteen of the studies compared hypericum products to placebo, and overall scores on a clinical test for depression improved dramatically, according to Linde's report in the *British Medical Journal* (Aug 3, 1996;313:253-8). The herb worked better than antidepressant drugs in three studies involving direct comparisons.

Hypericum is "highly popular in German speaking countries but virtually unknown in the English speaking

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world," Linde wrote. "If we had restricted our literature search to English language publications, as often done in meta-analyses, we would not have identified a single trial in our initial search in spring 1994."

In addition to the chemical generally referred to as hypericum, the herb also contains bioflavonoids, such as quercetin, and is a potent antioxidant. These other substances may also play a role in easing depression.

In a separate study, Wayne C. Hawkes, MD, investigated the relationship between selenium levels and mood problems in 11 generally healthy men. Men with low selenium levels at the start of the study were more prone toward depression, confusion, fatigue, anxiety, uncertainty, and hostility, according to his article in *Biological Psychiatry* (1996;39:121-8). The brain "receives a priority supply of selenium during selenium depletion," explained the researchers.

Selenium supplementation did not improve the moods of the subjects, but that could have been due to a number of variables, Hawkes noted. "Although the results of this study are not definitive, it adds to the growing weight of evidence that selenium is involved in central nervous system functions and that dietary selenium can affect brain functions, including mood," he wrote. □

## Low Vitamin B12 Levels Found in Spouses of Senile Patients

Low vitamin B12 levels are often found in senile patients, and at least one study has shown that supplements can improve the cognitive abilities of some of them. The problem, however, may not be entirely due to inadequate B12 intake. Rather, it may be related to malabsorption of the vitamin.

In a recent study, researchers at the University of Southern California School of Medicine, Los Angeles, found that blood levels of B12 were also low in 67 percent of the spouses of senile patients. The deficiencies could not be detected with traditional measures of low B12, such as megaloblastic anemia, but were detected by measuring elevated blood levels of methylmalonic acid, according to an article by R. Carmel, MD, in the *European Journal of Haematology* (July 1996;57:62-7).

The deficiencies among spouses may very well have reflected similar diets as well as a risk of developing dementia. In most cases, the B12 deficiencies were reversed by treatment.

In a letter to the journal *Neurology* (July 1996;47:311-2), Eric J. Norman, PhD, and Charles Cronin, MD, noted that people may be deficient in B12 even when they appear to have normal blood levels of the vitamin. They cited a study in which 49 percent of patients with normal B12 levels had high methylmalonic acid levels. Elevated methylmalonic acid in the blood is a very sensitive indicator of B12 metabolism and utilization. □

## Beta-Carotene May Aid Cognition

Diets high in beta-carotene and associated nutrients may help maintain brain function in the elderly, according to a recent study by Dutch researchers.

L. J. Launer, PhD, of Erasmus University, compared the dietary intake of antioxidant nutrients in 5,182 people between the ages of 55-95. Launer found that people consuming less than 0.9 mg of beta-carotene daily were almost twice as likely to have cognitive problems than people eating more than 2.1 mg of the nutrient daily, according to an article in the *American Journal of Epidemiology* (Aug 1, 1996;144:275-80). The cognitive problems included poor memory, difficulty in solving problems, and disorientation.

Beta-carotene is an antioxidant that may slow age-related changes in the body and mind, but neither vitamin C nor E were associated with cognitive problems in this study. However, Launer noted that the intake of other antioxidants (such as non-beta carotenoids and flavonoids) not measured in the study could have influenced the findings. □

## Free Radicals, Antioxidants Play Roles in Schizophrenia

Forty-five years ago, Abram Hoffer, MD, PhD, and his colleagues figured out that free radicals were one of the culprits in schizophrenia. Based on their theorized mechanism of oxidized adrenaline—since confirmed, but usually ignored—Hoffer developed a treatment protocol based on vitamins B3 and C.

Hoffer's ideas may now be a step closer to acceptance by the psychiatric establishment. In a review article, Sahebarao P. Mahadik, PhD, of the Veterans Hospital, Augusta, Ga., recently reviewed the role of free radicals in causing brain damage and the probable benefits of antioxidants, such as vitamins C and E, beta-carotene, and coenzyme Q10.

According to Mahadik's article in *Schizophrenia Research* (1996;19:1-17), the heightened activity of some brain chemicals, called catecholamines, increases free radical production in the brains of schizophrenics. At the same time, schizophrenics apparently do not produce antioxidant enzymes, such as superoxide dismutase and glutathione peroxidase, as efficiently as do normal people. As a result, schizophrenics suffer more free radical damage to brain cells. Mahadik wrote that antioxidants might prevent brain injury and improve the clinical treatment of schizophrenia. □

## Alpha-Carotene, Veggies Lower Lung Cancer Risk

Epidemiological (population-based) studies showing that beta-carotene reduces the risk of cancer may actually reflect consumption of multiple carotenoids. So, using a

new database with food levels of several carotenoids, researchers at the National Cancer Institute reanalyzed an older study of beta-carotene and lung cancer. This time they found that eating vegetables, particularly those high in alpha-carotene, reduced the risk of lung cancer.

Regina G. Ziegler, PhD, compared the diets of New Jersey men with diagnosed cancer of the trachea, bronchial tubes, or lungs with comparable healthy men. "Increased lung cancer risk was associated with low vegetable and fruit intake in current and recent cigarette smokers and in pipe and / or cigar users," she and her colleagues wrote in the *Journal of the National Cancer Institute* (May 1, 1996;88:612-5). Men who consumed little alpha-carotene had twice the risk of cancer than men who ate a lot of it.

Although both alpha- and beta-carotene were associated with lower risk of cancer, Zeigler established an even stronger relationship between the consumption of yellow-orange vegetables and low risk of cancer, suggesting these foods contain other protective nutrients. □

## Lycopene Continues to Show Promise as a Potent Anticarcinogen

In a recent study of the antioxidant properties of carotenoids, Catherine A. Rice-Evans, PhD, of Guy's Hospital, London, established a hierarchy of carotenoids. She found that lycopene, the red carotenoid found in tomatoes, quenched free radicals faster than did beta-carotene, according to her article in *FEBS Letters* (April 22, 1996;384:240-2).

The hierarchy was:

- lycopene
- cryptoxanthin and beta-carotene (equal)
- lutein and zeaxanthin (equal)
- alpha-carotene
- echinenone
- canthaxanthin and astaxanthin (equal).

Meanwhile, Japanese researchers have reported that lycopene significantly suppressed the development of spontaneous breast tumors in mice. It worked, at least in part, by blocking the activity of transforming growth factor alpha, which is known to promote cancer, according to an article in the *Bulletin of the Faculty of Agriculture, Meiji University* (1996;108:45-8).

A separate study, published in *Anti-Cancer Drugs* (1996;7:195-8), reported that lycopene increases the number of T4 cells and normalized the T4 and T8 cell ratio, a sign of improved immune function. □

## Retin-A Shrinks Stretch Marks

Stretch marks might not shorten your life, but they may make your body look older than it really is. Now, however, there's evidence that a synthetic form of vitamin A, sold on prescription as Retin-A, can reduce the size of relatively new stretch marks.

Sewon Kang, MD, of the University of Michigan Medical Center, Ann Arbor, measured stretch marks on 22 men and women. The stretch marks were the result of pregnancy, obesity, weight lifting, and large breasts. Kang asked the subjects to rub on either a Retin-A or a look-alike cream for six months.

Of the 10 patients using Retin-A, "stretch marks were markedly improved in four (40%), improved in four (40%), and unchanged in two (20%)," Kang wrote in *Archives of Dermatology* (May 1996;132:519-26). Of the 12 patients who received plain cream, only one (8%) showed improvement, and 11 (92%) remained the same or developed larger stretch marks.

Overall, the stretch marks among the Retin-A users decreased 14 percent in length and 8 percent in width, while the stretch marks increased 10 percent in length and 24 percent in width among users of plain cream. □

## Fish Reduces Risk of Rheumatoid Arthritis and Stroke

Diets high in the omega-3 fatty acids from fish appear to reduce the risk of developing rheumatoid arthritis in women, according to a study conducted at the Fred Hutchinson Cancer Research Center, Seattle.

Lead investigator Jean A. Shapiro, PhD, analyzed the dietary habits of 324 women with rheumatoid arthritis and compared them to 1,245 women without the disease. Women who ate the largest amounts of "fish oils" were 57 percent less likely to suffer from arthritis, according to Shapiro's article in *Epidemiology* (1996;7:256-63).

The greatest benefits were among women eating broiled or baked fish, such as salmon, mackerel, brook trout, blue fish, or herring. Fried fish consumption was associated with a slightly higher risk of arthritic symptoms.

A number of other studies have found a relationship between high fish consumption and low risk of rheumatoid arthritis. The omega-3 fatty acids reduce inflammation, one of the characteristic signs of rheumatoid arthritis.

In another study, Richard F. Gillum, MD, of the Centers for Disease Control and Prevention, found that liberal consumption of fish reduced the risk of stroke in white women and black men and women, but not in white men.

Gillum analyzed dietary data of 5,192 people who participated in the first National Health and Nutrition Examination Survey (NHANES I).

"White women who reported consuming fish more than once a week had only half the risk of stroke during a follow-up of up to 16 years compared with women who never ate fish..." he wrote in the *Archives of Internal Medicine* (March 11, 1996;156:537-42). □

# Quick Reviews of Recent Research

## • Genistein lowers breast and prostate cancer risk

A number of mechanisms may account for why soy foods and specifically the genistein in it may inhibit the development of cancers. As a very weak estrogen mimic, genistein may block the growth-promoting activity of much more potent hormonal estrogens. Genistein also inhibits tyrosine protein kinase, an enzyme cancer cells need for growth.

Peterson G and Barnes S, *Journal of Cellular Biochemistry*, 1996;22S:181-7.

## • Beta-carotene may protect against colon cancer

Although findings have admittedly been mixed, there is accumulating evidence that beta-carotene may play a role in preventing colon cancer. In this study, supplemental doses, but not ordinary dietary levels, of beta-carotene were toxic to cancerous cells. Beta-carotene had no toxic effect on normal cells.

Iftikhar S., et al., *Nutrition and Cancer*, 1996;25:221-30.

## • Beta-carotene better absorbed from supplements

In a study at the University of Illinois, researchers fed ferrets diets supplemented with either beta-carotene or carrot juice. Tissue levels of both beta-carotene and alpha-carotene were higher in the group receiving beta-carotene supplements. The researchers concluded that pectin-like fibers in the food matrix, and perhaps the crystalline form of carotenoids in carrot juice, limited their absorption.

Zhou J-R, et al., *Journal of the American College of Nutrition*, 1996;15:84-91.

## • Inositol may help in panic disorder

Inositol, considered a non-essential part of the vitamin B complex, penetrates the blood-brain barrier and has been successfully used to treat depression. In a recent study, physicians used 12 grams of inositol daily to treat panic disorder or severe anxiety in 21 patients. The number of panic attacks or episodes of anxiety decreased significantly with inositol, compared with placebo, over a four-week period.

Benjamin J, et al., *American Journal of Psychiatry*, 1995;152:1084-6.

## • Vitamin E helps immune system bounce back

Researchers fed laboratory rats diets with either very high or moderate levels of vitamin E, then exposed them to x-ray radiation. Subsequently, the rats' immune functions were analyzed. Immune cells from the rats consuming large amounts of vitamin E recovered much more quickly than those in the moderate vitamin E group.

Moriguchi S, et al., *Nutrition Research*, 1996;16:645-656.

## • Green tea reduces risk of stomach cancer

Based on an epidemiological study that found green tea to reduce the risk of stomach cancer, researchers attempted to induce stomach cancer in mice who were fed green tea extract and epigallocatechin gallate, one of the principal antioxidant flavonoids found in tea. Both substances inhibited the development of stomach cancer.

Yamane T, et al., *Cancer*, 1996;77:1662-7.

## • Supplements better than food for folic acid

Folic acid is good for the heart, but supplements may be more beneficial than foods with the vitamin. Irish researchers gave 41 women either folic acid supplements, foods fortified with folic acid, foods with a naturally high content of the vitamin, or dietary advice to encourage consumption of foods rich in folic acid. Only women taking supplements or eating fortified food showed increases in folic acid levels. "The most likely explanation," the researchers wrote, "lies in the known increased bioavailability of folic acid over food folates."

Cuskelly GJ, et al., *Lancet*, 1996;347:657-9.

## • Cruciferous vegetables inhibit lung cancer

Cruciferous vegetables, such as cauliflower, broccoli, and brussel sprouts, contain a variety of compounds called isothiocyanates. In an experiment, researchers exposed rats to tobacco-specific cancer-causing nitrosamines. The chemical induced lung cancer in 67 percent of the rats. When given various isothiocyanates, the incidence of cancer ranged from only 9 to 24 percent.

Chung F-L, et al., *Cancer Research*, 1996;56:772-8.

## Anti-Aging Meeting Slated for Las Vegas, December 14-16

The American Academy of Anti-Aging Medicine (A<sup>4</sup>M) will hold its 4th annual conference on Anti-Aging Medicine & Biomedical Technology, Dec. 14-16, 1996, at the Alexis Park Resort, Las Vegas, Nevada. More than 100 physicians and researchers plan to discuss the latest findings related to disease prevention and slowing the aging process. For information on the conference, call (719) 475-8775, or fax (719) 787-3394.

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### THE NUTRITION REPORTER™

Post Office Box 5505  
Aloha, OR 97006-5505 USA

Editor and Publisher: **Jack Challem** Associate Publisher: **Renate Lewin**

#### Medical Advisors:

**London H. Smith, MD** Portland, Oregon  
**Richard P. Huemer, MD** Vancouver, Washington  
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