



Nutritional Influences on Illness

by Melvyn R. Werbach, MD

4751 Viviana Drive • Tarzana, California 91356 USA
Phone 818-996-0076 • Fax 818-774-1575

Atherosclerosis and Vitamin E

Vitamin E is a potent antioxidant which prevents lipid peroxidative tissue damage. It appears to regulate endothelial cell proliferation and repair while protecting the cells against oxidative injury.¹

In a large study involving 24 countries, dietary vitamin E intake was strongly inversely correlated with the risk of death from coronary heart disease. Sunflower seed oil was the major source of alpha-tocopherol. This oil has 7 times the vitamin E content of soybean oil, the main oil consumed in most countries studied with higher rates of coronary artery disease.² Moreover, vitamin E intake has been found to be inversely related to carotid arterial wall thickness.³

Plasma vitamin E levels have shown similar inverse correlations. For example, in a study of middle-aged men from 16 European countries, there was a strong inverse correlation between age-specific mortality from ischemic heart disease and lipid-standardized vitamin E levels.⁴

Cholesterol-standardized vitamin E levels within atherosclerotic plaques are significantly lower than in normal arterial wall, while lipid oxidation products are significantly higher;⁵ in fact, the severity of coronary atherosclerotic lesions have been found to be inversely related to vitamin E levels in arterial tissue.⁶

Supplementation

Numerous studies have examined the effects of vitamin E supplementation on coronary heart disease and acute myocardial infarction. Vitamin E supplementation of at least 100 IU daily slowed the progression of coronary artery atherosclerosis in men with previous coronary bypass surgery.⁷ In a double-blind study, supplementation of 800 IU per day significantly reduced the risk of cardiovascular death and non-fatal MI for over 2,000 patients with coronary atherosclerosis when reassessed after a mean of 510 days.⁸

When the use of vitamin supplements was related to the incidence of ischemic heart disease, vitamin E was more consistently and strongly associated with a lower incidence of the disease than any other vitamin.⁹ Also, in a 4-year prospective study of almost 40,000 male health professionals who were initially free of diagnosed coronary heart disease, diabetes and hypercholesterolemia, men who took at least 100 IU of vitamin E daily for at least 2 years had a multivariate relative risk of coronary disease of only two-thirds of those who did not take the supplements.¹⁰ For high-risk patients, however, more recent double-blind studies failed to find evidence of the vitamin's efficacy in preventing cardiovascular events.¹¹⁻¹²

Under controlled conditions, vitamin E supplementation prior to cardiac bypass surgery has improved the outcome¹³ and prevented the usual increase in free radicals during surgery.¹⁴ Furthermore, supplementation may reduce the risk of restenosis following percutaneous transluminal coronary angioplasty¹⁵ as well as the risk of thrombosis following heart transplantation.¹⁶

While vitamin E has not been noted for lowering elevated LDL cholesterol levels, supplementation has raised HDL cholesterol levels in some studies,¹⁷ but not in others,¹⁸ perhaps because only certain people are responders.¹⁹ It is also the nutrient that has been shown most consistently to prevent LDL oxidation.²⁰ This effect appears to be dose-related with a threshold of about 400 IU daily,²¹ although 1,200 IU daily is significantly more effective.²² There is also evidence from double-blind studies that Vitamin E may reduce platelet adhesiveness²³ and aggregation.²⁴

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