

**Magnesium associated with protection from stroke in male smokers**

The March 10, 2008 issue of the AMA journal *Archives of Internal Medicine* revealed the finding of researchers at the Karolinska Institutet in Stockholm, Sweden, that men who smoke may acquire some protection against stroke by consuming greater amounts of the mineral magnesium.

The current study included 26,556 participants in the Alpha-Tocopherol, Beta-Carotene Cancer Prevention (ATBC) Study, a randomized, double-blind trial that tested the preventive ability of alpha-tocopherol (vitamin E) or beta-carotene on lung cancer in older male Finnish smokers. Dietary questionnaires administered at the beginning of the study were evaluated for calcium, magnesium and potassium intake levels. The men were followed for an average of 13.6 years, during which 2,702 cerebral infarctions, 383 intracerebral hemorrhages, 196

subarachnoid hemorrhages, and 84 unspecified types of stroke occurred.

Researcher Susanna C. Larsson and her colleagues found that men whose magnesium intake was highest, at an average of 589 milligrams per day, had a risk of cerebral infarction (the most common type of stroke involving blockage of blood flow to the brain) that was 15 percent lower than those whose consumption of the mineral was lowest, averaging 373 milligrams per day. Men who were under 60 appeared to derive the greatest benefit from the mineral. Although potassium intake was also associated with a lower risk of cerebral infarction, adjustment for various factors reduced the significance of the association.

In their introduction to the article, Dr Larsson et al note that because hypertension is a stroke risk factor, nutrients that affect blood pressure could modify stroke risk, and they remark that magnesium has recently been confirmed in a meta-analysis to modestly reduce diastolic blood pressure. The authors observe in their commentary on the current study's findings that magnesium supplementation has also been shown to have beneficial effects on glucose, triglycerides, HDL, LDL, VLDL and total cholesterol levels in a laboratory study of diabetic rats. Additionally, the mineral has been linked with a reduction of markers of inflammation and endothelial dysfunction, as well as fasting insulin and glucose. Because increased magnesium intake has been shown to reduce the risk of type 2 diabetes, which has been associated with ischemic stroke, part of the protective benefit of magnesium may be its antidiabetic effect.

"Whether magnesium supplementation lowers the risk of cerebral infarction needs to be assessed in large, long-term randomized trials," the authors conclude.

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**Health Concern****Stroke and cerebrovascular disease**

Ischemic stroke is responsible for 80 percent of all strokes (NINDS 2005). There are two kinds of ischemic stroke. The first, a thrombotic stroke, results from a blood clot (thrombus) forming in a vessel inside the brain and cutting off the blood supply to the tissues served by that vessel.

The second, an embolic stroke, occurs when a clot forms somewhere else in the body, breaks off, and travels to the brain. The clot can originate in a peripheral artery, in the heart itself, or in the arteries in the neck or brain. Among people with an abnormal heart rhythm called atrial fibrillation, clots can arise in the left atrium and travel through the left side of the heart and the aorta and into the brain. When the clot becomes lodged in the artery, the tissue beyond the blockage is starved of oxygen and begins to die.

Nutritional therapy in cerebrovascular disease associated with atherosclerosis has several interrelated goals. These include reversing endothelial dysfunction with nutrients that stimulate endothelial nitric oxide production, reducing inflammation,

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enhancing and restoring cerebral blood flow, and providing antioxidant support to reduce the level of damaging free radicals. A number of nutrients have been studied that often accomplish several of these goals.

Evidence has emerged that a balance of potassium, calcium, and magnesium may reduce platelet aggregation and improve insulin resistance. Other studies have shown that combining magnesium and calcium with potassium is more effective than any one of these supplements alone in reducing blood pressure, atherosclerosis, and risk of stroke.

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