Dynamic Chiropractic

VITAMINS / SUPPLEMENTS

Multivitamins Related to Reduced Heart Attack Risk

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A recent study published in the *Journal of Nutrition* showed that individuals taking a daily multivitamin supplement experienced fewer heart attacks than those who did not.[1] The study showed that male multivitamin supplement users had 22 percent fewer heart attacks, and females had 33 percent fewer heart attacks than male and female multivitamin nonusers, respectively. These findings may be explained by the fact that several vitamins and minerals are known to affect risk factors for atherosclerosis and heart disease.

Folic acid, vitamin B_{12}, and vitamin B_6 are required to prevent the build-up of homocysteine in the bloodstream. High homocysteine in the blood is associated with an increase of heart attacks, as it increases platelet aggregation and vasoconstriction; encourages oxidation of LDL-cholesterol; and initiates other changes that promote atherosclerosis. Folic acid and vitamin B_{12} work synergistically to provide a methyl group to homocysteine, which converts it into the amino acid methionine within the cells of the body.

The average intake of folic acid across the population is only 190-210 mcg per day, whereas the amount required to ensure that homocysteine is recycled back to methionine is in the range of 400-600 mcg per day. Thus, the use of a daily multivitamin (most of which provide 400 mcg daily) provides insurance against a build-up of homocysteine, and in turn, is associated with reduced heart disease risk.

Some individuals have a resistance to the conversion of homocysteine to methionine, due to genetic factors (faulty enzyme structure) and may require levels of folic acid and vitamin B_{12} at levels exceeding those found in most multivitamin supplements. In these cases, folic acid supplementation of 1,000 mcg per day may be required to bring blood levels of homocysteine into a safer range.

Vitamin B_6 is required by the enzyme cystathionine synthase, which converts homocysteine into cystathionine (which can be converted to serine and cysteine with the help of other B_6-dependent enzymes. Studies show that more than 30 percent of the U.S. population does not attain the RDA level for vitamin B_6 each day from food alone. A suboptimal intake of vitamin B_6 has also been shown to encourage the build-up of homocysteine, which, in turn, contributes to heart disease risk. As such, the daily use of a multivitamin may help to keep homocysteine within a safer range by providing more optimal levels of vitamin B_6.

Antioxidants found in multivitamin supplements may also be protective against heart attacks. Vitamins E and C and beta-carotene are known to reduce free radical damage to LDL cholesterol in the bloodstream. In turn, this makes LDL cholesterol less inclined to participate in the atherosclerosis process. In the event that LDL cholesterol becomes damaged by free radicals (oxidized), it is picked up more rapidly by macrophage cells within the atherosclerotic plaque of the blood vessel wall. In this instance, LDL cholesterol will thicken the plaque and narrow the blood

vessel, restricting blood flow to vital organs, such as the heart. Studies have shown that individuals and populations with higher blood levels of vitamins E and C have an associated lower risk of heart attack. Most experts believe it is due to the protection these antioxidants provide to LDL cholesterol as it circulates through the bloodstream. Because nonoxidized LDL cholesterol displays a significantly lower propensity to get picked up by macrophages within the arterial plaque, it is less atherogenic.

Reference

1. *The Journal of Nutrition* 2003;133:2650-2654.

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NOVEMBER 2003