



The Role of **MICRONUTRIENTS** In **HEART DISEASE**

DID YOU KNOW...

- Since 1900, heart disease has been the #1 killer of Americans?
- Heart disease kills more Americans than the next five top causes combined, including cancer, diabetes and accidents?
- 1 in 3 Americans currently have some form of heart disease?
- Over 150,000 deaths from heart disease each year occur with people under the age of 65?
- Cardiovascular Disease ranks as the #2 cause of death (after accidents) for children under 15 years?

MICRONUTRIENTS AND HIGH BLOOD PRESSURE

High blood pressure can result in physical damage to the walls of our blood vessels. Although the causes of hypertension often overlap, micronutrient deficiencies can cause or worsen this condition. Several mineral deficiencies such as zinc, copper, calcium and magnesium have been linked to high blood pressure.

Research also suggests that a high level of oxidative stress eventually takes its toll on our arteries, ultimately causing hypertension. Several studies of coenzyme Q10 lowered blood pressure significantly. Antioxidant vitamins C and E help blood vessels maintain their flexibility, allowing them to easily dilate and contract. The powerful antioxidant lipoic acid reduces blood pressure by inhibiting inflammatory responses in the blood vessels. Vitamin D deficiency is linked to hypertension because it contributes to endothelial dysfunction, a condition where the lining of blood vessels cannot relax properly and secrete substances that promote inflammation of the blood vessel lining.

PREVENT ARTERIAL “SCARRING”

Vitamin B6, B12, folate, serine and choline are all necessary to properly metabolize homocysteine and reduce the risk of arterial scarring. In fact, B-vitamin therapy has been an effective treatment for reducing heart disease and blood pressure.

KEEP YOUR HEART MUSCLE STRONG

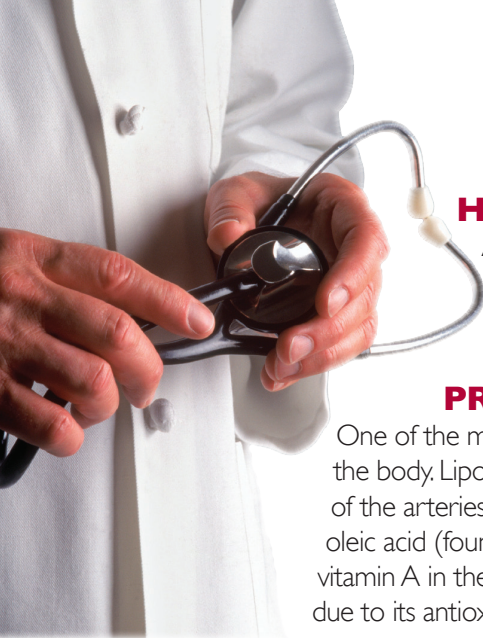
The heart's requirement for energy compared to other muscle tissues is incredibly high. Carnitine is an amino acid that facilitates the transport of fatty acids into heart cell mitochondria, thus helping the heart meet its strong demand for chemical energy. It also helps muscles, including the heart, recover from damage, such as from a heart attack. Vitamin B1 (thiamine) is another key component in energy metabolism by helping the heart increase its pumping strength. Deficiencies of vitamin B1 (thiamine) have been found in patients with congestive heart failure, as long-term use of diuretic drugs, which are often prescribed to those patients, deplete the body's storage of thiamine. Coenzyme Q10 is also required by cardiac tissue in large amounts to properly function. Statin drugs deplete the body of CoQ10, so deficiencies of CoQ10 in statin-users are particularly common. The side effect of statin therapy is frequently observed as muscle pain.

HEART DISEASE IS AN INFLAMMATORY PROCESS

Scientists now emphasize that heart disease is actually an inflammatory condition within the blood vessels. Inflammation and oxidative stress work together damaging arteries and impairing cardiac function. Several antioxidant nutrients minimize this inflammatory process.

Glutathione is the most potent intracellular antioxidant and actually helps to regenerate other antioxidants in the body. Cysteine, glutathione, B2, selenium, Vitamin E and Vitamin C work together to reduce oxidative stress throughout the entire cardiovascular system. It is essential that balance in the antioxidant system is critical and that use of a single antioxidant may be detrimental.





HOW WELL DO YOUR ARTERIES FIGHT OXIDATIVE STRESS?

An optimal antioxidant status is particularly important in the prevention of chronic diseases such as heart disease and stroke. Since many antioxidants work together synergistically, measuring a single antioxidant may not provide an accurate picture of total antioxidant function.

PREVENTING ATHEROSCLEROSIS

One of the major culprits in heart attacks and stroke is the buildup of plaque within the arteries throughout the body. Lipoproteins become dangerous when they are oxidized, making them "sticky" and causing blockage of the arteries (atherosclerosis). Micronutrient deficiencies accelerate atherosclerosis. One study showed that oleic acid (found primarily in olive oil) reduces oxidative damage to lipoproteins. It also facilitates absorption of vitamin A in the gut, which is important because vitamin A is linked to lower levels of arterial plaque, primarily due to its antioxidant effect in protecting lipids from oxidation.

Vitamin K supplementation to deficient people slowed the progression of plaque formation in major arteries. Vitamin B3 (niacin) lowers blood cholesterol (fats in the blood), inhibits the oxidation of LDL, and is currently the most effective drug available for raising the heart-protective, good HDL cholesterol. One study on side products made from vitamin B5 (pantothenic acids) showed a decrease in blood triglycerides and cholesterol, and evidence suggests that vitamin E can even retard existing atherosclerosis. Another study showed that inositol, a member of the B vitamin family, decreases dangerous small, dense lipoproteins that easily penetrate blood vessel walls and cause atherosclerosis.

PREVENTING STROKE

A recent study on more than 20,000 people concluded that adequate vitamin C levels reduced risk of stroke by over 40%. Similar studies on calcium, magnesium, folate and biotin all concluded that adequate levels of these nutrients contribute to a reduction in the incidence of stroke.

SpectraCell's micronutrient tests measure 33 vitamins, minerals and antioxidants in your body and evaluates how well your body absorbs and utilizes each nutrient. Ask your doctor about SpectraCell's micronutrient testing today!

VITAMINS

Vitamin A
Vitamin B1
Vitamin B2
Vitamin B3
Vitamin B6
Vitamin B12
Vitamin C
Vitamin D
Vitamin K
Biotin
Folate
Pantothenate

MINERALS

Calcium
Magnesium
Zinc
Copper

AMINO ACIDS

Asparagine
Glutamine
Serine

ANTIOXIDANTS

Alpha Lipoic Acid
Coenzyme Q10
Cysteine
Glutathione
Selenium
Vitamin E

SPECTROX™ FOR TOTAL ANTIOXIDANT FUNCTION

CARBOHYDRATE METABOLISM

Chromium
Fructose Sensitivity
Glucose-Insulin Metabolism

FATTY ACIDS

Oleic Acid

METABOLITES

Choline
Inositol
Carnitine

