Dynamic Chiropractic

NUTRITION / DETOXIFICATION

Co-Enzyme Q10: Essential for Cardiovascular Health After Age 40 (Part I of II)

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What Is CoQ_{10}?

Coenzyme Q_{10} (CoQ_{10}), also known as ubiquinone, is a vitamin-like substance synthesized by the body, although some food sources provide additional amounts of it. In order to survive and carry out their specialized functions, each cell in the body must continually convert some of the food we eat (carbohydrate, fat, alcohol and protein) into a usable source of energy, known as ATP energy. CoQ_{10} is an essential nutrient that enables our cells to convert the food we eat into ATP-energy within the "energy factory" of the cell, the mitochondria.

If our cells cannot produce sufficient amounts of ATP energy due to a CoQ_{10} deficiency state, a decline in cell function occurs that hastens the onset of accelerated aging; heart disease or a weakened heart pump; a decline in brain function; and/or a weakening of the immune system and heightened cancer risk. More recently, we have seen that CoQ_{10} deficiency is a key underlying factor in the development of Parkinson's disease and many cases of congestive heart failure and high blood pressure. It also contributes to other common problems associated with aging.

CoQ_{10} Synthesis Declines With Age

From the standpoint of slowing the aging process and preventing the onset of age-related degenerative diseases, it is critical to understand that the body can only make optimal amounts of CoQ_{10} up to about the age of 20. After that, there is a decline in CoQ_{10} synthesis that starts to become significant by approximately age 40. In the body, this synthesis is a 17-step process that involves eight vitamins (mostly the B-vitamins) and several minerals. After age 20, some of the enzymes required in this process drop off, which impairs the ability of the body to make the amount it needs for optimal health.

Although some foods contain CoQ_{10}, their intake alone is not sufficient to compensate for the body's declining CoQ_{10} nutritional status that occurs with aging. For example, you would have to consume half a pound of sardines or two-and-a-half pounds of peanuts to yield 30 mg of CoQ_{10} intake; the average intake of from food each day is 5-10 mg. This is enough up to a certain age, as your body is making the majority of what it needs when you are young. However, studies suggest that 30-60 mg of CoQ_{10} supplementation per day is required after ages 40-50, and dosages in the range of 150-300 mg per day are required to favorably affect outcomes in patients with congestive heart failure, high blood pressure, irregular heartbeats, failing memory and Parkinson's disease, and for cancer treatment support. This is why it becomes essential to take a CoQ_{10}-containing supplement after age 40, or certainly by age 50.

Certain medications interfere with the body's ability to synthesize (or absorb) CoQ_{10}, so if you are taking any of the following, you should be ingesting 30-60 mg per day of CoQ_{10} to compensate for the lack of synthesis imposed by them, regardless of your age:

- Beta blockers; biguanides; clondine; haloperidol; HMG-CoA reductase inhibitors; hydralazine; methydopa; phenothiazines; thiazide diuretics; and tricyclic antidepressants decrease CoQ_{10} synthesis.
- Orlistat reduces CoQ_{10} absorption. (Don't take CoQ_{10} supplements within 90 minutes of ingesting this.)
- Sulfonylureas - Some of these drugs decrease CoQ_{10} synthesis (e.g., acetohexamide, glyburide, tolazamide).
- Gemfibrozil (cholesterol-lowering drug).

CoQ_{10} Is a Conditionally Essential Anti-Aging, Disease-Prevention Nutrient

Many experts classify CoQ_{10} as a "conditionally essential" nutrient, suggesting that the body makes ample amounts for optimal health up to a certain age, and thereafter requires supplementation of this nutrient to maintain optimal function of each cell. The decline in CoQ_{10} synthesis that occurs during the course of normal aging may be one more example of how genetic blueprints begin to work against people as they get older; some consider it part of nature's plan to remove life from the planet once it has served nature's purpose of procreation. If one's intention is to maximize lifespan, slow or reverse the aging process of the body, reduce the risk of many degenerative diseases, and live with the greatest degree of energy and vitality, in my opinion, supplementation with CoQ_{10} is simply a necessity for those ages 40-50 and older.

In essence, supplementation with CoQ_{10} allows you put the substance back into your body, to compensate for what your body can no longer provide for itself. It is a safe, effective, essential, natural anti-aging intervention that counters the body's aging clock, providing you with the opportunity to sustain more optimal functioning of every cell in your body as you age.

In addition to its crucial role of boosting energy production in each cell of the body, CoQ_{10} is also a powerful fat-soluble antioxidant, which helps protect the mitochondria of the cell from free radical damage. This is a key aspect in slowing the aging process and preventing degenerative diseases, as the mitochondria responsible for ATP energy production is prone to damage from oxygen free radicals. When this occurs, its ability to produce ATP energy for the cell can become severely compromised, leading to a decline in cellular function.

CoQ_{10} is also known to enhance immune function, which may help to prevent cancer and infections. Supplementation can be used to help slow aging and keep bodies functioning at a more optimal level with age; however, it has been shown to have significant therapeutic effects in the management of some cardiovascular diseases, Parkinson's disease, and some other degenerative conditions. The following information summarizes the research status of CoQ_{10} with regard to its application in cardiovascular disease, with specific reference to congestive heart failure, high blood pressure and mitral valve prolapse involving arrhythmia.

Congestive Heart Failure and CoQ_{10}

A decline in CoQ_{10} status has been shown to contribute to the development of congestive heart failure, a condition in which the heart muscle becomes too weak to effectively pump blood through arteries and blood vessels of the body. More specifically, a lack of CoQ_{10} inhibits the heart muscle from producing the ATP energy it requires to contract with enough force to pump blood through the system. As a result, blood circulation backs up and fluid leaks out of the blood vessels into various tissues, such as the lungs, hands and feet, leading to shortness of breath, swelling of the hands, ankles and feet on both sides of the body, and high blood pressure. Congestive heart failure

(CHF), a condition that occurs in aging, is a life-threatening condition. Biopsy results from the hearts of patients with various age-related cardiovascular diseases, especially congestive heart failure, show a deficiency in CoQ_{10} in 50 percent to 75 percent of cases. Low blood levels of the substance are also a consistent finding in the majority of these patients.

A number of well-designed clinical studies have shown that CoQ_{10} supplementation can reverse congestive heart failure in a large percentage of cases. It simply enables the heart muscle to re-establish its ability to produce the ATP energy it requires to become strong again, efficiently pumping blood through the circulatory system of the body. Proof of its therapeutic benefits in these cases is highlighted by the fact that discontinuation of CoQ_{10} supplementation has resulted in severe relapses of congestive heart failure in patients who were previously deriving benefits from its use for this condition. In cases such as these, supplementation must be a lifelong strategy, as the heart's ability to efficiently pump blood through the system is directly related to the amount of CoQ_{10} available to produce ATP energy.

Interestingly, the beneficial effects may not be seen until after several months of treatment in some cases of CHF and other cardiovascular conditions, such as angina and high blood pressure. Patients with these problems need to allow enough time for CoQ_{10} concentrations to build up in the heart muscle before positive changes can occur. Generally speaking, CoQ_{10} can be taken with other drugs used to treat CHF, high blood pressure and other heart ailments, and studies show that its use often enables doctors to reduce the number of other heart medications required to control these conditions. However, if a patient is currently suffering from congestive heart failure, any other heart condition, or high blood pressure, he or she should not begin supplementation without first notifying the attending physician.

As surprising as it may seem, most doctors and cardiologists in the United States and Canada do not use CoQ_{10} supplementation in their usual treatment protocols for CHF and other heart conditions. This is largely due to the influence of drug companies which have not exposed medical practitioners to the studies involving CoQ_{10}. The substance cannot be patented as a drug, and therefore, it does not represent a source of profitability to drug companies, who generally have a vested interest only in drugs in which they hold a patent.

However, CoQ_{10} is widely prescribed for the treatment of congestive heart failure and other cardiovascular conditions by doctors in Italy, Sweden, Israel and Japan, who report significant improvement in a high percentage of their heart patients. In fact, many citizens in these countries take CoQ_{10} for prevention, as well as for therapeutic purposes. One study showed that 15 percent of Swedes and 20 percent of Danes take it. As far back as 1987, there were already more than 10 million citizens in Japan using it for the treatment of heart-related conditions

The point to be made is that in many cases, CHF appears to be caused by the age-related decline in CoQ_{10} synthesis that is programmed into the aging clock in the genes. The gradual reduction in CoQ_{10} concentrations in the heart muscle eventually results in insufficient ATP energy production to enable the heart to beat or contract with enough force to maintain blood flow through the body's intricate network of arteries and blood vessels. As such, many experts believe that it makes sense to supplement a diet with CoQ_{10} as a way to prevent CHF from developing in the first place.

One way to help guard against CHF is to take at least 30 mg of CoQ_{10} per day at 40-50 years of age. By age 60-65, it may be wise to increase the dosage to 60 mg per day. Patients with CHF usually require higher dosages to combat this ailment on a therapeutic level. In these cases, it is not uncommon for doctors to recommend 150-300 mg per day, taken in divided doses (e.g., 50 mg,

three times daily, or 120 mg, twice daily). A significant blood level of CoQ_{10}, usually greater than 3.5 micrograms per milliliter, is necessary to obtain a therapeutic effect, especially in cases of CHF, according to practitioners who regularly prescribe CoQ10 for these cardiovascular conditions.

[Editor's note: Part II of this article will discuss high blood pressure, angina and CoQ_{10}; detail how hawthorne enhances supplementation; and list resources for both parts.]

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