

COENZYME Q10 (CoQ10)

Lowest levels of CoQ10 Seen in Hyperthyroidism

CoQ10 is an essential nutrient that is decreased in many diseases. Recent studies show that the lowest levels of all are seen in patients with hyperthyroidism and also in patients on statin cholesterol-lowering agents.

What is CoQ10?

Coenzyme Q10 (CoQ10), which is also known as ubiquinone, is a naturally occurring nutrient present in the energy storehouses known as mitochondria, which are found in each and every cell of the body. First identified by researchers at the University of Wisconsin in 1957, CoQ10 is important for energy metabolism. In addition, CoQ10 has antioxidant and anti-inflammatory properties and acts as a cofactor in that it enhances the effectiveness of other vitamins, particularly B vitamins.

CoQ10 is produced in our bodies, with males having higher levels than females. Blood levels of CoQ10 peak at ages 19-21 and then fall with age. Certain nutrients are essential for the production of CoQ10 including B2, B6, B3, folic acid, pantothenic acid and vitamin C. Deficiencies of any of these nutrients can interfere with the production of CoQ10 and result in CoQ10 deficiencies. A nutrient-rich diet helps ensure adequate CoQ10 production, but in some disease states low levels of CoQ10 occur.

Low CoQ10 Levels in Hyperthyroidism

Low levels of CoQ10 are associated with many diseases, including chronic pulmonary diseases, cardiovascular diseases including congestive heart failure, migraine disorders, muscular dystrophies, hypertension, diabetes, some cancers and autoimmune diseases and Parkinson's disease. However, of all the diseases studied, the lowest blood levels of CoQ10 have been found in people with hyperthyroidism, including autoimmune hyperthyroidism (Graves' disease). Studies suggest the low levels of CoQ10 in hyperthyroidism cause a defect in cellular energy transport.

In some, but not all studies, high levels of CoQ10 are seen in hypothyroidism, including subclinical disorders. Most studies show no significant change in the CoQ10 levels of normal (euthyroid) subjects compared to people with hypothyroidism. Autoimmune disorders associated with a weak immune system are reported to benefit from CoQ10 because it strengthens the immune system without stimulating it. According to one widely accepted current theory, all autoimmune disorders are caused by a weak ineffective immune system, which has been crippled by allergens, toxins, poor diet and other environmental triggers.

Medications and Aging

Coenzyme Q10 levels are reported to decrease with age, and certain drugs deplete CoQ10 levels. These drugs include, statin cholesterol-lowering agents and beta blockers.

Medical Uses of CoQ10

In preliminary studies, CoQ10 has been shown to slow down but not cure dementia in people with Alzheimer's disease. CoQ10 has also been shown in studies to prevent gum disease. Preliminary studies show that CoQ10 has value when given to patients within three days of having a heart attack and that it increases sperm production in motility in men. Fair evidence in studies shows that CoQ10 can improve and prevent migraine headaches. There is also promising human evidence for the use of CoQ10 in the treatment of Parkinson's disease. In all cases, additional clinical trials have been recommended. Because CoQ10 may decrease blood sugar and blood pressure, caution should be used in patients using medications to treat hypertension and diabetes.

In some countries, including Canada, CoQ10 is added to statin cholesterol-lowering agents to prevent the muscle damage associated with statins. This muscle damage has been associated with the depletion of CoQ10 caused by caused by statins. Statins are also known to interfere with the body's natural production of CoQ10.

Dosage

Most studies show that CoQ10 supplements containing 30-60 mg used once daily are necessary for the maintenance of optimal CoQ10 levels. In subjects with hyperthyroidism or who take statin drugs, doses of 100 mg daily are often needed.

Resources:

Mancini G.M., Corbo A, Gaballo S, et al, Relationships between plasma CoQ10 levels and thyroid hormones in chronic obstructive pulmonary diseases, The Fourth Conference of the International CoQ10 Association, July 17, 2006.

Coenzyme Q10 Medline Plus Service of the U.S. National Library of Medicine, Nov 1, 2006, Accessed July 20, 2006.

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