



# Coenzyme Q-10 (CoQ10)

By: Gary E. Foresman, MD

08/23/07

CoQ10 is a near legendary vitamin-like compound present in virtually all cells. Especially high concentrations are found in the heart, liver, kidney and pancreas. Within the cells, it is primarily found in the mitochondria and the nucleus. Its primary functions are as a fat soluble anti-oxidant, membrane stabilizer and is a co-factor in multiple metabolic pathways, especially in those involved with the production of ATP (the energy compound of the cell). As the body produces CoQ10, it is not considered a vitamin. Small amounts are found in our food supply, primarily coming from meats and seafood.

Supplements of CoQ10 formulated in soybean oil have superior bioavailability to other formulations. Peak levels are obtained in 5-10 hours after consumption and the serum half-life is approximately 34 hours. The reference range for serum CoQ10 level is 0.5 to 1.5 mcg/ml, although I have rarely measured CoQ10 in my clinical practice, I intend to do so more frequently as recent studies link lower CoQ10 levels with many diseases such as migraines, tinnitus, asthma, and many, many others.

CoQ10 levels are highest during our first 20 years of life, and decrease with age where at age 80, levels can be lower than those present at birth. In humans, 10 genes are required (CoQ1 to CoQ10) for CoQ10 synthesis. In other species CoQ6-9 dominates, but only CoQ10 has significant function in humans. The gradual loss of CoQ10 with age has been correlated with many diseases, specifically neurodegenerative diseases such as Parkinson's and Alzheimer's and all forms of atherosclerotic cardiovascular disease. Multiple clinical trials have documented profound and important clinical benefits to CoQ10 supplementation.

Consider supplemental CoQ10 for the following conditions:

- Congestive Heart Failure (CHF) although mixed results have occurred with clinical trials primarily in the US, CoQ10 has been approved for the treatment of CHF in Japan since 1974! Most trials indicate CoQ10 improves quality of life, decreases symptoms and prevents hospitalization in CHF patients. Furthermore, repeated trials show an improvement in heart ejection fraction. Dosage ranges from 100-400mg/day.

- **Atherosclerotic Cardiovascular Disease (ASCVD)** The well-documented effects of statins, also including the herbal supplement red yeast rice extract, in the prevention of cardiovascular mortality has been tainted by the depletion of the vital nutrient CoQ10. Clinical trials document that statins decrease CoQ10 by at least 42%, while supplementing CoQ10 at 100mg per day can increase CoQ10 by 127%, despite being on a statin. Multiple, but not all, clinical trials have documented that CoQ10 can prevent and treat statin-related myopathy (muscle damage) and statin-related hepatotoxicity (liver damage), the most common problems associated with statins. This, along with the evidence that CoQ10 improves cardiac function, reduces angina by improving arterial relaxation, lowers systolic blood pressure by up to 26%, prevents LDL oxidation (really bad LDL), prevents thrombosis while also increasing good HDL cholesterol, yet still we can't get our cardiologists to recommend a vital supplement that has no downside. When CoQ10 is started within 72 hours of having a heart attack and administered for 1 year, all cardiac events and cardiac death are significantly lowered. All of these studies are published in respected, peer-reviewed American Cardiology Journals. If you have any type of ASCVD, you should take CoQ10, especially if you are taking a statin medication.
- **Hypertension** Taking CoQ10 at 200mg/day can lower systolic blood pressure by 26% within 12 weeks.
- **Migraines** In adults taking CoQ10 at 300mg per day headache frequency is decreased by 33%. A three month trial is required and benefits can also be seen in adolescents with low CoQ10 levels.
- **Parkinson's Disease** Dosages up to 1200mg per day have been used safely and in several, but not all trials, significant clinical benefits have been noted. The primary role of CoQ10 in Parkinson's is in that of slowing the progression of the disease.
- **Muscular Dystrophy** Clinical trials at 200mg of CoQ10 per day have documented improved muscular function.
- **Asthma** In patients with steroid-requiring asthma, CoQ10 has been documented to lower the incidence of steroid rescue medications.
- **Breast Cancer** I ran across a series of articles on a unique combination of supplements including CoQ10 100mg, riboflavin 10mg, and niacin 50mg, combined with the anti-estrogen drug tamoxifen (20mg). The anti-oxidant combo that they coined "CoRN" prevented all of the adverse effects on the cholesterol profile that is caused by tamoxifen, while decreasing inflammatory responses and lowering serum cancer markers, which would all indicate a further reduction in cancer recurrence risk.
- **Tinnitus (ringing in the ears)** In patients with low CoQ10 levels, supplementation of CoQ10 at 200mg per day significantly improved this tough to treat and quite annoying symptom.

CoQ10 is quite well tolerated, but at doses greater than 100mg, a few (less than 1%) people may experience an upset stomach, and if this is the case it can be divided into doses throughout the day. Whereas some pharmacists list CoQ10 with potentially interacting with blood pressure medicines, this is only because it can lower your blood

pressure. Whereas some doctors are concerned that CoQ10 may decrease the effect of chemotherapy, indeed it actually protects you from the side-effects, while improving its effectiveness. Finally, although anecdotally CoQ10 has been listed as interacting with the blood thinner Coumadin, actual clinical trials show that it has no effect on the “Coumadin” level. Monitoring people on Coumadin who initiate any supplement is always a wise choice.

Your Journey to Health and Healing,  
Gary E. Foresman, MD

### References:

1. Natural Medicines Comprehensive Database [www.naturaldatabase.com](http://www.naturaldatabase.com)1.
2. Endogenous Synthesis of CoQ10 in Eukaryotes. *Mitochondrion*. 2007 Jun; 7 Suppl: s62-71.
3. Effects of CoQ10 on Plasma Lipids... *Atherosclerosis*. 2007 Aug 4.
4. Effect of CoQ10 on Endothelial Function... *Eur Heart J*. 2007 Sep; 28 (18): 2249-55.
5. Effect of CoQ10 on Myopathic Symptoms in Patients Treated with Statins. *Am J Cardiol*. 2007 May 15; 99 (10): 1409-12.
6. CoQ10 in the Treatment of Hypertension. *J Hum Hypertens*. 2007 Apr; 21 (4): 297-306.
7. The Impact of CoQ10 on Systolic Function in Patients with Chronic Heart Failure. *J Card Fail*. 2006 7. Aug; 12 (6): 464-72.
8. Ameliorating Effect of CoQ10, Riboflavin and Niacin... *Clin Biochem*. 2007 Jun; 40 (9-10): 623-8.
9. A Pilot Clinical Trial of the Effects of CoQ10 on Chronic Tinnitus. *Otolaryngol Head Neck Surg*. 2007 Jan; 136 (1): 72-7.

Website: [www.middlepathmedicine.com](http://www.middlepathmedicine.com)

E-mail: [info@middlepathmedicine.com](mailto:info@middlepathmedicine.com)