Coenzyme Q10 (ubiquinone or ubiquinol) is a fat soluble, vitamin – like substance synthesized and found in virtually all cells of the human body, especially the heart, kidneys and liver. It is most often connected to Dr. Karl Folkers, often referred to as the “father of Co-Q10”, who published a great deal of research on this molecule since 1958. Co-Q10 is made from acetyl CoA of which pantethine (vitamin B5) is a precursor.

The best sources of Co-Q10 in the diet are from organ meats taken from beef, pork and chicken. The best vegetarian sources are broccoli, spinach, soybean oil and palm oil. Supplement manufacturers make Co-Q10 from mainly yeast and bacterial fermentation.

Properties

Co-Q10’s most well known biological property is its antioxidant action. Oxidation (a loss of electrons) is the damaging result of external stressors such as radiation, pollution, heavy metal toxicity, alcohol, drugs, infection and aging. Co-Q10 can protect the body from the adverse effects of oxidation by inactivating damaging molecules known as free radicals.

Co-Q10 also converts oxidized vitamins like vitamin C and E back into their reduced (gain of electrons) form so that they can perform their vital functions as antioxidants in the body.

Co-Q10 is a membrane stabilizer for all cells, preventing breeches in the lining of all cells, including platelets.

Co-Q10 helps create energy in all cells by helping to generate ATP (adenosine triphosphate), needed for mitochondrial enzymatic reactions commonly referred to in biochemistry as the “electron transfer chain”.

Preventive And Therapeutic Applications

Cardiovascular Disease

Research indicates that Co-Q10’s most important application is in the prevention and treatment of any and all cardiovascular problems. Its basic mechanism of action occurs in the mitochondria of the heart cell and vascular endothelial cells to reverse oxidative stress otherwise known as free radical damage. It protects LDL (the “bad”) cholesterol from becoming oxidized and damaging to the blood vessels.

Studies indicate that Co-Q10 in a dose of 100 mg twice daily for a period of two weeks can lower blood pressure an average of 20 points within 12 weeks. It may therefore be an important way of controlling mildly elevated blood pressure.

Cardiac Drug Protection

Statin drugs are used to lower blood levels of cholesterol. Unfortunately, they also deplete the body of Co-Q10. This produces painful muscle damage that can often be at least partially offset by Co-Q10 supplements. I usually recommend at least 200 mg of Co-Q10 to anyone on any cardiac drug simply because it just makes the drugs work better with fewer side effects.

Beta-blockers, commonly used for angina, high blood pressure and arrythmias can also deplete body stores of Co-Q10. Supplementation of 100 - 200 mg daily is warranted.
Cancer

Several small studies seem to indicate that Co-Q10 can help with cancer, especially breast cancer. While not a proven cure, doses of 400 mg or more a day have been used with success in curtailing the spread of breast cancer.

Co-Q10 also has a place in therapy for people who are being given chemotherapeutic drugs because supplementing Co-Q10 at the same time will help prevent damage to the heart caused by the drugs.

Diabetes

Co-Q10 supplementation can reduce insulin requirements in diabetics. Taking high doses of Co-Q10 may induce hypoglycemic reactions in some diabetics. Prescription medications used for diabetes such as glyburide can reduce the body stores of Co-Q10, so supplementation is warranted.

Parkinson’s Disease

Co-Q10 can protect brain cells from oxidative stress. Recent studies have shown that Co-Q10 can improve symptoms in Parkinson’s disease at dosages of 1200 mg a day.

There is research that is currently being conducted for the use of Co-Q10 in the treatment of Alzheimer’s disease, Huntington’s chorea and muscular dystrophy.

Migraines

Studies done in 2004 showed that the occurrence of migraine headaches can be reduced by 50% with a daily dose of Co-Q10 of 100 mg daily over a period of 3 months.

Chronic Fatigue Syndrome (CFS)

CFS victims can benefit from daily doses of 200 mg of Co-Q10 over a period of 3 months. Most people who suffer from any degree of fatigue will benefit far earlier than that.

Periodontal Disease

Gum disease caused by bacterial damage can be improved dramatically with Co-Q10 supplementation of at least 200 mg daily.

The Ubiquinol Hype

You may have read literature from several sources that Co-Q10 is best taken as a supplement in the ubiquinol form instead of the ubiquinone form because the former has a higher absorption rate and produces higher blood levels than the ubiquinone form. Both forms are fat-soluble so this is not an issue. Unfortunately, ubiquinol is at least four times more expensive and no research documenting its benefits over the ubiquinone form has ever been done in humans. The research to date on the purported benefits of ubiquinol has only been done in rats.

Aside from that, the truth is that the body easily converts ubiquinone into ubiquinol, regardless of the absorption rate. Ubiquinone is the more stable compound and the body tends to use it every bit as much as ubiquinol, freely converting back and forth between the two forms as needed. Each form has specific tasks in its oxidant – antioxidant properties.

It is therefore preferable to purchase ubiquinone as the form of Co-Q10 for all its uses. Ignore the hype and buy the cheaper form of Co-Q10 (ubiquinone). For further information on this issue, see Co-Q10 Facts and Fabrications (http://www.zmc-usa.com/docs/CoQ10_Facts_or_Fabrications.pdf).
How To Supplement With Co-Q10

Co-Q10 is best taken in divided doses (ideally two to four times daily) with food. It is compatible with all supplements and side effects are virtually unknown. There is a caution to be noted in people who use anti-coagulant medications because Co-Q10 can make those medications more potent. Check with your doctor if you take any blood thinning prescription drugs.

Side Effects Of Co-Q10

Aside from longevity, documented side effects of Co-Q10 in doses ranging from 30 - 1200 mg a day are minor and include some stomach upsets, appetite suppression, nausea and diarrhea in very sensitive individuals. Taking Co-Q10 late during the day might induce insomnia in some individuals due to its energy enhancing effects.

Dr. Zoltan P. Rona practises Complementary Medicine in Toronto and is the medical editor of “The Encyclopedia of Natural Healing.” He has also published several Canadian best-selling books, including “Return to The Joy of Health” and “Vitamin D - The Sunshine Vitamin.” For more of his articles, see www.mydoctor.ca/drzoltanrona

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