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Description

Coenzyme Q10 is a vitamin-like nutrient that is vital to the production of energy. As one of the electron carriers in the electron transport system, it helps cells utilize oxygen. If you have ever wondered how we get energy from food, or why we have to breathe oxygen, it is because the body strips food of electrons and transports them to an electron acceptor, which is oxygen. Coenzyme Q10 facilitates this process, providing one of the "spark plugs" for the creation of cellular energy. Without Coenzyme Q10, we would not have enough energy to fuel the physiological reactions we need to survive (Folkers K & Wolaniuk A. *Drugs Exp Clin Res.* 1985;11(8):539-45). Dr. Folkers notes that Coenzyme Q10 levels falling to 75% may cause illness, whereas falling to 25% may cause death (Folkers, *ibid*). There is evidence showing that low Coenzyme Q10 levels can lead to death within six months (Statistical data support prediction of death within 6 months on low levels of coenzyme Q10 and other entities. *Clin Investig* 1993;71 (8 supp):S137-39).

Coenzyme Q10 concentration in the mitochondria (sometimes called the "powerhouse" of the cell) is not believed to be saturated, which is one of the reasons researchers think that supplementation is having beneficial effects (*Clin Investig* 1993;71(8 Suppl):S66-70). Numerous therapeutic effects of coenzyme Q10 have been reported, most notably in areas where oxygen transport is critical, for instance heart disease, aging and periodontal disease. Since an adequate supply of oxygen is necessary for tissue repair and immune function, many applications have been reported in these areas. Additionally, coenzyme Q10 has therapeutic potential because of its antioxidant properties (fights damaging free radicals). Coenzyme Q10 has a wide variety of functions and applications in the body.

Clinical Applications/Research

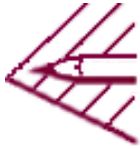
- Cardiovascular disease
- Aging
- Chronic illness
- Memory
- Alzheimer's disease
- Periodontal disease
- Antioxidant
- Breast cancer
- High blood pressure
- Brain function
- Energy production

Cardiovascular

The ability that Coenzyme Q10 has for increasing oxygen delivery and energy supply contributes to its reputation for supporting the cardiovascular system in clinical trials, including mitral valve prolapse, angina, cardiomyopathy, hypertension (Folkers K et al., *Treatment of essential hypertension with Coenzyme Q10. Mol Aspects Med* 1994;15(Suppl):S265-72), and congestive heart failure (Morisco C. et al. *Effect of Coenzyme Q10 therapy in patients with congestive heart failure: a long-term multicenter randomized study*). In one clinical trial, 150 mg/day of Coenzyme Q10 was administered for 10 months to two patients with mitochondrial encephalomyopathy, and results showed a significant improvement in oxygen consumption, in the ability to reach a higher workload and improvement of mitochondrial function (*Neurology* 1992;42(6):1203). It should be noted that some cholesterol-lowering drugs and beta blockers can reduce levels of Coenzyme Q10, whereas Coenzyme Q10 supplementation has been shown to reduce the drug-induced fatigue experienced by people taking beta blockers (*Biomedical and Clinical Aspects of Coenzyme Q 10 Vol. 4. Folkers, K. & Yakamura Y (eds). Elsevier Science Publ. Amsterdam, 1984, pp. 263-270*).

Patient Fact Sheets

The information in this report is intended for informational purposes only and should not be used to diagnose, treat, cure or prevent disease, or as a substitute for sound medical advice. Please consult with a qualified healthcare provider in all matters pertaining to your health. The statements above have not been evaluated by the FDA. The information provided cannot include all reported research, contraindications, toxicology, or drug/nutrient/herb interactions or depletions. The items marked with an asterisk () are provided by the practitioner and are the sole responsibility of the practitioner.*



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Clinical Applications/Research

Aging

With its ability to prevent mitochondrial damage and act as an antioxidant, "it is interesting to speculate that Coenzyme Q10 might play a fundamental role in decelerating aging" (Lee, WH et al. PhD, Coenzyme Q10. Keats Publ., New Canaan, Connecticut 1987). Research suggests that Coenzyme Q10 levels decline in illness, environmental stress, and aging, and these deficiencies could play a role in the age-related decline in immune system function (Folkers; Bliznakov, EG. Immunological senescence in mice and its reversal by Coenzyme Q10. Mech Aging Dev Mar. 1978;7(3):189-97). In one study, Coenzyme Q10 was able to reverse the age-related deterioration of the immune system in mice (Bliznakov ibid).

Memory/Alzheimer's

One of the theories of impaired memory involves lack of oxygen utilization by the brain, a function that is supported by Coenzyme Q10. The research which has been conducted on Coenzyme Q10 suggests that sufficient Coenzyme Q10 must be administered for a long enough period (usually 4-12 weeks), to achieve results, which is consistent with a buildup of enzyme activity. For instance, 60 mg of Coenzyme Q10 was administered for 6 months, along with vitamin B-6 and iron, to a 49 year old woman with Alzheimer's disease, who had a one year history of progressive memory impairment. It's believed that electron activity is reduced in Alzheimer's patients, and the lack of energy fuel may be implicated in furthering development of the tangles seen on the nerves in Alzheimer's (Neurology 1990;40:1302-03). Co-enzyme Q10, of course, supports the production of electron activity and delivery of energy fuel to the nerves.

Post-treatment, there was increased blood flow in the brain, faster alpha wave activity, and, "her mental state improved to almost normal after 6 months of therapy...symptoms progressed with cessation of the therapy and improved with its resumption" (Wilkinson EG et al. Bioenergetics in clinical medicine. Res Commun Chem Pathol Pharmacol 1975;12:111).

Periodontal Conditions

Coenzyme Q10, "has demonstrated excellent results in clinical trials on periodontal disease...The studies have been positive in showing a speedup of healing time, reduced pockets, and improvements in other factors associated with gum disease" (Mayell, M. The Natural Health First Aid Guide. 1994. Pocket Booksj, NY, NY. p. 298). In one trial, Coenzyme Q10 elicited postsurgical healing that was two to three times faster than usual in 7 patients with advanced periodontal disease (Wilkinson EG et al. Bioenergetics in clinical medicine. Res Commun Chem Pathol Pharmacol 1975;12:111).

Antioxidant

In addition to being associated with energy production, Coenzyme Q10 is a powerful antioxidant. It has the ability to decrease the amount of harmful free radical activity in the body (Grieb, P. Antioxidant systems - physiology and pharmacotherapy trends. Mater Med Pol 1992 24(4):217-222).

Breast Cancer

There are not many studies that have been conducted in this area, however, research done by Lockwood et al. indicates that there is some evidence that Coenzyme Q10 may be helpful in supporting the treatment for breast cancer (Lockwood K et al. Progress on therapy of breast cancer with vitamin Q 10 and the regression of metastases. Biochem Biophys Res Commun Jul 1995;6;212(1):172-77).

Chronic Fatigue Syndrome

Chronic fatigue patients who are having problems with energy metabolism may respond favorably to Coenzyme Q10.

Other Uses



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Clinical Applications/Research

Obviously, there are many clinical applications for Coenzyme Q10. Some of the benefits this nutrient offers are in supporting various physiological functions and organ systems, including: generally increasing oxygen delivery to tissues; heart function, brain function, periodontal health, antioxidant status, memory, increased blood flow, blood pressure, mitochondrial function (energy production), and tissue healing. There are so many aspects of importance in Coenzyme Q10, that many people believe it should be included in the category of conditionally essential nutrients.

Nutrient Applications

Olive Oil or Other Fats

Coenzyme Q10 should be taken with a fat-soluble transport system for optimal bioavailability. Olive oil is rich in monounsaturated fat and therefore highly resistant to oxidation. Combining Coenzyme Q10 supplementation with olive oil or other types of oil, or with a healthy fat containing meal will enhance absorption.

Suggested Dosage

50-300 mg per day.

Contraindications/Toxicology

General Disclaimer

Medicinal amounts of any vitamin, mineral, herbal or specialty nutrient should only be taken with the advice of a licensed healthcare professional.

Drug/ Nutrient Interactions

Swedish researchers have observed that patients taking Coenzyme Q10 and Coumadin at the same time had their bleeding time significantly changed, and the Coumadin was less effective. A knowledgeable health care practitioner should always be consulted when a patient is on any blood thinner, as there are several contraindications involved.