The Catalyst for the Power Plant – Coenzyme Q_{10}

Coenzyme Q10 (CoQ10), mainly functions to help the tiny sub-cellular factories called mitochondria perform energy transfer. Many human cells contain high levels of CoQ10, especially the brain, heart, and kidneys, since they require lots of oxygen.

Another important role for CoQ10 is anti oxidation or rust prevention for the cells. Many clinical studies have found an incomplete or malnourished anti oxidation system results in more free radical production. The resultant oxidation damage to cells weakens the immune system, speeding up the aging process and disease formation. CoQ10 production normally declines with age making adults more prone to disease as they reach their golden years. Therefore, proper supplementation is critical to ensure cell function and decrease the risk and rate of disease occurrence. Lean meat and liver are excellent CoQ10 sources; fish, beans, and nuts contain good levels. Cooking and processing easily damages CoQ10.

Nutraceutical use for CoQ10

- Cardiovascular disease (CVD)
  With diet and exercise, nutrition supplementation, especially antioxidants, can also decrease risk of atherosclerosis, heart attack (MI), and stroke. Besides the well-known, antioxidant nutrients, vitamins A, C, E, and selenium, CoQ10 provides double benefits for heart health.
- Immunomodulation
  CoQ10 possesses the ability to adjust the immune system (immunomodulator)
  Research confirms the positive relationship between CoQ10, immune system markers, malignant tumor development, virus, and infection. Deficiency in serum CoQ10 can increase the risk of developing a tumor, cancer, thyroid dysfunction, and asthma. CoQ10 is beneficial in controlling and shrinking cancer cells, and prevents side effects resulting from cancer treatment,Suchas breathing difficulties, abnormal ECGs, cardiothoracic ratio, and variable pulse rates. CoQ10 supplementation can also prevent organ transplant rejection.
- Neurodegenerative disease
  Parkinson's disease Causes of include abnormal mitochondrial function, excess oxidation stress, and inflammation. Mitochondrial CoQ10 acts as an antioxidant and protects nerve cells from further damage.
- Male infertility
  A study of male infertility addressing sperm count and activity level showed that abnormal sperm had a lower CoQ10 level than normal sperm. The data also suggested that oxidation of sperm is an important cause of male infertility. Since CoQ10 can inhibit hydroperoxide (H2O2) formation, it can act as both an indicator and treatment. (H2O2)
- Renal disease
  High oxidative stress level and low antioxidative ability contribute to the progression of kidney disease. A clinical study monitored renal patients for serum malondialdehyde (MDA), a product of fat metabolism and indicator of oxidative damage to lipids, and used as a biomarker of lipid peroxidation resulting from free radicals. At the same time scientists measured antioxidant levels including CoQ10, vitamin E, and ß-carotene. Patients undergoing immunosuppressant treatment had the highest MDA and lowest serum CoQ10 levels. The results showed that CoQ10 supplementation can reduce the progression and severity of renal disease.
- Anti-aging and anti-wrinkle
  Aging and photo-aging relates to cell oxidation progression, and possibly to the lowering of cellular antioxidant CoQ10 level. A recent study found that the external use of CoQ10 for skin can have the following beneficial effects: (1) prevent photo-aging, (2) pass through epidermis and reduce oxidative stress, (3) reduce deep wrinkles, (4) shield against the oxidative stress caused by UVA in cornified cells, (5) protect DNA from oxidative damage, and (6) inhibit collagen break down caused by UVA exposure.
- Allergy
  Reactive oxygen species (ROS) free radicals cause bronchial asthma. Antioxidant supplementation improves the defense mechanism. Many studies report low serum antioxidant levels with CoQ10 significantly lower in asthma and bronchial asthma patients.
- Improve memory and migraine
  Research showed supplementation with magnesium, CoQ10, B2, butterbur, feverfew, and B12 with folate and B6 resulted in a reduction of homocysteine levels and improvement of migraines. In an integrated treatment, research patients supplemented with multivitamins, vitamin E, alpha-lipoic acid, omega-3 and coenzyme Q-10 had improved cognition and memory.
- Improve exercise function and prevent exercise injury
  A performance study of athletes verified the benefit of CoQ10 in improving muscle performance. Another exercise study showed that serum creatine kinase, a marker for muscle damage declined in the CoQ10 supplement group. Indecate that CoQ10 supplementation provides protection against skeletal muscle damage caused by exerclse injury.

Absorption and function of CoQ10 improves when combined with other nutrients. Vitamins B, C, and E act synergistically with CoQ10 to maintain physiologic function.

References available upon request.