

Can Taking CoQ10 Prevent Heart Disease?

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STORY AT-A-GLANCE

- › A number of studies support the use of CoQ10 for heart health; much of CoQ10's cardioprotective effects involve its antioxidant effects and ability to produce ATP
- › People who took CoQ10 were also less likely to experience a nonfatal or fatal heart attack over 12 months compared to those who did not
- › Low levels of CoQ10 are associated with an increased risk of heart failure, with the severity of heart failure correlated with the severity of CoQ10 deficiency
- › Supplementing with CoQ10 for eight to 12 weeks can significantly reduce CRP, tumor necrosis factor alpha (TNF- α) and IL-6, measures of widespread inflammation
- › By the age of 65, your body typically produces only about half the amount it did at 25, so supplementation with CoQ10 or its reduced form ubiquinol is helpful in some cases

Coenzyme Q10 (CoQ10) is a fat-soluble antioxidant your body uses for energy production. While it's found in nearly every cell in your body, the highest levels are in your heart, liver and kidneys.¹ CoQ10 plays a role in the production of adenosine triphosphate (ATP),² a compound involved in cells' energy storage and the synthesis of nucleic acids.

CoQ10 must be present in the inner mitochondrial membrane in order for energy from carbohydrates and fats to be converted into ATP, which is the form of energy cells use.³ As a member of the ubiquinone family, humans can synthesize CoQ10 as well as

consume it via their diet, in foods like grass fed beef, sardines and herring. It's estimated that dietary CoQ10 accounts for about 25% of plasma CoQ10 levels.⁴

Genetic alterations in metabolism, poor diet, oxidative stress, chronic conditions, certain medications and aging can all interfere with CoQ10 production, however, leading to CoQ10 deficiency. If you don't get enough of this important compound, your heart health could suffer, as CoQ10 is a key player in heart health. In fact, 75% of ischemic heart disease patients have low levels of CoQ10.⁵

CoQ10's Role in Heart Health

Preventing heart disease requires a comprehensive approach involving healthy diet, daily movement and stress management. So, taking any supplement alone, including CoQ10, shouldn't be considered a panacea to preventing heart disease. That said, heart health is CoQ10's claim to fame.

Many conditions, including heart disease, appear to be rooted in mitochondrial dysfunction.⁶ Cardiac muscle cells have about 5,000 mitochondria per cell,⁷ where CoQ10 concentrates.

For further comparison, mitochondria make up about 35% of the volume of cardiac tissue and only 3% to 8% of the volume of skeletal muscle tissue.⁸ Brown University researchers conducted a study to determine which micronutrients are best for your heart.⁹ They unveiled an evidence-based map that quantifies the impact of micronutrients on cardiovascular outcomes.

Out of 27 micronutrients, three — omega-3 fats, folic acid and CoQ10 — came out on top. CoQ10 decreased all-cause mortality events, according to the Journal of the American College of Cardiology study.¹⁰ Much of CoQ10's cardioprotective effects involve its antioxidant effects and ability to produce ATP.¹¹ A number of studies support the use of CoQ10 for heart health, including the following conditions:

- 1. Heart attack** — Taking CoQ10 daily within three days of a heart attack reduces the risk of a subsequent heart attack and chest pain, while lowering the likelihood of

dying from heart disease.¹² People who took CoQ10 were also less likely to experience a nonfatal or fatal heart attack over 12 months compared to those who did not.¹³

The number needed to treat, or NNT, which describes how many people have to take a particular drug to avoid one incidence of a medical issue, was 34 to prevent one nonfatal heart attack and 60 to prevent one fatal heart attack.

"Clinicians should consider adding coenzyme Q10 to the treatment regimen of high-risk patients of myocardial infarction," the researchers wrote in Cureus. "... Using coenzyme Q10 as a supplement will improve the quality of life of such patients."¹⁴

2. Heart failure – Supplementing with CoQ10 may improve heart failure, in which the heart cannot pump enough blood for your body. Low levels of CoQ10 are associated with an increased risk of heart failure, with the severity of heart failure correlated with the severity of CoQ10 deficiency.

"Emerging data suggest that the harmful effects of reactive oxygen species are increased in people with heart failure, and coenzyme Q10 may help to reduce these toxic effects because of its antioxidant activity," according to a study published in the Cochrane Database of Systematic Reviews.¹⁵ Further, the Cureus study scientists also highlighted CoQ10's potential for improving heart failure:¹⁶

"Coenzyme Q10 reduces admission in heart failure and reduces the episodes of pulmonary edema in heart failure ... coenzyme Q10 improves 6 minute walk time in patients with heart failure ... supplement of coenzyme Q10 reduces the risk of all cause-death, worsening of heart failure, and cardiovascular death."

3. Atrial fibrillation (Afib) – Scavenging of reactive oxygen species (ROS) and a reduction in oxidative stress are an essential part of keeping the heart functioning normally,¹⁷ including helping to ward off Afib,¹⁸ an abnormal, often rapid, heart rhythm that occurs when the atria, your heart's upper chambers, beat out of sync

with the ventricles, the heart's lower chambers. It's a common symptom in those with heart failure or heart disease.

In one study, 102 patients with Afib were divided into two groups. One group was given a CoQ10 supplement while the other group was given a placebo. After 12 months of supplementation, 12 people in the placebo group had Afib episodes compared to only three people in the CoQ10 group.¹⁹ Levels of malondialdehyde, a known biomarker of oxidative stress, also went down significantly in the CoQ10 group.

- 4. Blood pressure** – CoQ10 acts directly on your endothelium, dilating your blood vessels and lowering blood pressure.^{20,21} CoQ10 also decreases aldosterone, a hormone that makes you retain salt and water.^{22,23} When aldosterone goes down, excess salt and water are excreted through your kidneys, often causing your blood pressure to go down.

In a systematic review and meta-analysis of 17 trials, CoQ10 supplementation significantly decreased systolic blood pressure as well as diastolic blood pressure, though the diastolic was not statistically significant.²⁴

- 5. Stroke** – Systemic inflammation, oxidative stress and nerve cell damage play a role in stroke development. Research suggests supplementing with CoQ10 can reduce ischemic lesions and improve outcomes in patients who have been treated with a statin drug after having a stroke (statins reduce CoQ10 levels in your body).²⁵
- 6. Lower inflammation** – C-reactive protein (CRP) is a marker for inflammation, and when your CRP is elevated, it suggests you have a heightened risk for heart disease.²⁶ CoQ10 supplementation was found to significantly reduce levels of circulating CRP, with researchers explaining:²⁷

"This meta-analysis provides evidence for CoQ10 supplementation to reduce the level of inflammatory mediators in the general population and proposes that daily supplementation of 300-400 mg CoQ10 show superior inhibition of inflammatory factors."

Two other markers for inflammation are gamma-glutamyl transferase (GGT),²⁸ which is an early marker of heart failure, and N-terminal pro b-type natriuretic peptide (NT-proBNP).²⁹

There's an association between the levels of these two markers and ubiquinol, the reduced version of CoQ10 (aka ubiquinone). When ubiquinol is supplemented, both these markers go down and genes associated with them are downregulated.^{30,31}

Supplementing with 60 milligrams (mg) to 500 mg of CoQ10 for eight to 12 weeks can also significantly reduce not only CRP but also tumor necrosis factor alpha (TNF- α) and IL-6;^{32,33} additional measures of widespread inflammation. Ubiquinol has also been found to improve vascular function in older adults, such that researchers suggested it "may hold promise for treating age-related vascular dysfunction."³⁴

Aging, Statins Are Two Drivers of CoQ10 Deficiency

Your production of CoQ10 peaks around the age of 25, then begins to decline. By the age of 65, your body typically produces only about half the amount it did at 25.³⁵ In addition to aging, statin cholesterol-lowering drugs are also well known to deplete CoQ10.

Statins block HMG coenzyme A reductase in your liver, which is how they reduce cholesterol. But this is also the same enzyme that makes CoQ10, making depletion likely. Statin-induced CoQ10 deficiency may be responsible for the myopathic – or relating to muscle control – side effects often attributed to these drugs.

Interestingly, LDL cholesterol is the major carrier of CoQ10 in your circulation, so it's also been suggested that the decrease in CoQ10 among statin users is related to the decrease in LDL.³⁶

In addition to statins, beta-blockers for high blood pressure and tricyclic antidepressant medications may also lower levels of CoQ10, as can fibric acid derivatives for cholesterol, such as gemfibrozil (Lopid).³⁷

Depending on your age and health status, supplementation may be necessary to keep your CoQ10 levels high enough for optimal health. Young people are able to use CoQ10 supplements quite well, but older people do better with ubiquinol, as it's more readily absorbed.

If you take a statin drug, you need at least 100 mg to 200 mg of ubiquinol or CoQ10 per day, or more. Ideally, you'll want to work with your physician to determine your ideal dose. However, generally the sicker you are, the more you need.

The suggested dose is usually 30 mg to 100 mg per day if you're healthy, or 60 to 1,200 mg daily if you're sick or have underlying health conditions.³⁸ If you have an active lifestyle, exercise a lot or are under a lot of stress, you may want to increase your dose to 200 to 300 mg per day.

CoQ10 May Boost Your Overall Health

It's not only your heart health that benefits from CoQ10. The nutrient is also useful for age-related diseases, with some studies suggesting it can increase lifespan in animal models.³⁹ Benefits have also been found for improving fertility in older women and reducing fertility decline in men.⁴⁰ It may also stop the progression of nonalcoholic fatty liver disease (NAFLD)⁴¹ and help relieve migraine headaches.⁴²

CoQ10 is also protective of the kidneys and may be useful in cases of acute kidney injury due to sepsis, drugs like nonsteroidal anti-inflammatories and other causes.⁴³ In short, "CoQ10 is essential for the health of virtually all human tissues and organs," as a review in the *Journal of Pharmacy & BioAllied Sciences* puts it,⁴⁴ so if you're older and don't think you're getting enough from diet alone, this is one supplement you may want to consider.

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