

Supplements to help manage total cholesterol, LDL and HDL

CoQ10

COMMON NAME: CoQ10

SCIENTIFIC NAME: Ubiquinone, ubiquinol

RECOMMENDED WITH CAUTION

LEVELS OF EVIDENCE



Recommended:

Several well-designed studies in humans have shown positive benefit. Our team is confident about its therapeutic potential.



Recommended with Caution:

Preliminary studies suggest some benefit. Future trials are needed before we can make a stronger recommendation.



Not Recommended - Evidence:

Our team does not recommend this product because clinical trials to date suggest little or no benefit.



Not Recommended - High Risk:

Our team recommends against using this product because clinical trials to date suggest substantial risk greater than the benefit.

Evaluated Benefits

- CoQ10 alone and CoQ10 combined with fenofibrate significantly lowered triglycerides levels.
- Reduction of statin-induced myopathy.
- Improvement in ejection fraction.

Source

Coenzyme Q10 (CoQ10) is a naturally occurring, fat-soluble quinone that is localized in hydrophobic portions of cellular membranes. The highest concentrations of CoQ10 are found in the heart, liver, kidneys, and pancreas.

Meats (beef, pork, chicken) and different species of fish are the richest dietary sources of CoQ10, presumably due to their high content of muscle and mitochondria. Among nonanimal products, oils and nuts have the highest CoQ10 content, whereas most fruits and vegetables are poor sources of CoQ10.

Indications/Population

Clinical studies have focused on three potential effects of CoQ10 supplementation: congestive heart failure, hypertension (HTN), and myopathy related to statin therapy.

Mechanism of Action

CoQ10 acts as an electron carrier in the mitochondrial respiratory chain. It also functions as an antioxidant, scavenging free radicals and inhibiting lipid peroxidation. CoQ10 is a potent lipophilic antioxidant and is capable of regeneration and recycling other antioxidants, such as tocopherol and ascorbate. Coenzyme Q10, as a polyphenol, could act directly on vascular endothelium to decrease total peripheral resistance or by reducing superoxide synthesis.

CoQ10 participates in endothelial metabolism, resulting in an increase in lipolysis of triglycerides.

HMG-CoA reductase blocks cholesterol synthesis at a step that not only reduces cholesterol synthesis but also the production of other metabolites, including ubiquinone CoQ10. Statins reduce plasma/serum levels of CoQ10 16% to 54%, mainly as a result of reducing serum LDL, which is its major transporter. Thus, it may be a valuable adjunct in statin treatment to lower LDL cholesterol.

Coenzyme Q10 also has a role in stabilizing myocardial calcium-dependent ion channels and preventing the consumption of metabolites essential for adenosine-5'-triphosphate (ATP) synthesis.

CoQ10 protects creatine kinase and other key proteins from oxidative inactivation during reperfusion, a function crucial in preserving energy metabolism and cardiac performance.

The primary action of CoQ10 in clinical hypertension is vasodilation, via a direct effect on the endothelium and vascular smooth muscle, resulting in decreased peripheral resistance accompanying lowered blood pressure and unchanged cardiac output.

Side Effects Source

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No important adverse effects reported from experiments using daily supplements of up to 1,200 mg. CoQ10 for 6–12 months and 100 mg daily for up to 6 years had no adverse effects.

Dosing

200 mg daily

Drug Interactions/Cautions

There is significant depletion of plasma CoQ10 due to statin therapy. Thus some statins, mainly lipid-soluble types, may decrease body CoQ10 levels below the threshold that is required for numerous redox-dependent processes. This depletion could be particularly important in the elderly, where CoQ10 levels are generally low. lower CoQ10 at 80 years than at birth.

As a free radical scavenger, dietary supplementation with CoQ10 may be useful in individuals with diabetes where endogenous CoQ10 synthesis may not be sufficient.

Notes

Bioavailability from a standard oral dose is low, being only 2–4%, however, it is improved when CoQ10 is in an oily suspension. Water-soluble gel formulations have been developed for improved CoQ10 absorption.

CoQ10 increases three- to fivefold in the lung, heart, spleen, liver, kidneys, pancreas, and adrenal glands in the first 20 years of life, and then decreases, with the spleen and pancreas reported to have lower CoQ10 at 80 years than at birth.

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