

# Coenzyme Q10 (CoQ10)

CPT Code 82542  
Sample Type EDTA Plasma or  
Serum

Order Code C295  
Tube Type Lavender Top or  
Tiger Top



vitamins

## Description

Coenzyme Q10 (CoQ10) is a fat-soluble, vitamin-like substance present in most cells, primarily in mitochondria. CoQ10 has two major roles within the human body: it participates in aerobic cellular respiration generating energy (i.e., ATP) and is a powerful antioxidant. CoQ10 exists as two forms in the body: ubiquinone and ubiquinol (the active form of CoQ10, which is made from ubiquinone).

Endogenous synthesis of CoQ10 is a very complex process requiring an adequate supply of numerous precursors and cofactors, and deficiencies in one or more of these components can adversely affect the production of adequate amounts of CoQ10. CoQ10 deficiency may also be caused by one or more of the following: insufficient dietary intake, impairment of CoQ10 biosynthesis, poor gastrointestinal absorption, and/or excessive utilization of CoQ10 by the body.

Exogenous sources of CoQ10 include animal products such as beef, pork and chicken. Plant products such as broccoli, spinach, soybean oil and palm oil are also good sources of CoQ10. Supplements are also widely available over-the counter, either as ubiquinol or ubiquinone. As a person ages, their body makes less ubiquinone, and the body's ability to convert ubiquinone to ubiquinol is reduced. Therefore, the choice of CoQ10 supplement may depend in part on the person's age.

## Clinical Use

CoQ10 testing may be performed on individuals on statin therapy who may or may not be experiencing myalgia symptoms, hypercholesterolemic individuals, and asymptomatic individuals at risk for vascular disease who may have low ApoA1 and/or HDL levels.

## Clinical Significance

- CoQ10 deficiency contributes to mitochondrial dysfunction and muscle dysfunction without myonecrosis<sup>1</sup>.
- Statin use may inhibit the production of CoQ10 in a dose-dependent fashion by as much as 40% in hypercholesterolemic individuals<sup>2</sup>.
- Exercise, in combination with statin therapy, can improve HDL levels and preserve CoQ10 levels<sup>3</sup>.
- Low CoQ10 levels may be associated with low ApoA1 and/or HDL levels<sup>3,4</sup>, and may increase infarct size if/when an individual has an acute myocardial infarction<sup>4</sup>.

## Sample Type

The CoQ10 test should be performed on a serum or EDTA plasma sample. Please do not store the sample in direct light/sunlight.

## Commercial Insurance or Medicare Coverage

Coverage guidelines, also known as NCD (National Coverage Determination) or LCD (Local Coverage Determination), have not been established or posted by CMS (Medicare & Medicaid). We have reviewed the larger Carriers (Aetna, United HealthCare, Cigna, Blues) and information has not been posted or is limited. Medical necessity and specificity of diagnosis should be provided when ordering this test.

## Understanding Medical Necessity

The following ICD-10 codes for CoQ10 are listed as a convenience for the ordering physician. The ordering physician should report the diagnosis code that best describes the reason for performing the test.

Diagnosis	Diagnosis Code
Type 2 Diabetes Mellitus with Hyperglycemia	E11.65
Type 2 Diabetes Mellitus without Complications	E11.9
Other Specified Diabetes Mellitus without Complications	E13.9
Pure Hypercholesterolemia, Unspecified	E78.00
Familial Hypercholesterolemia	E78.01
Mixed Hyperlipidemia	E78.2
Other Hyperlipidemia	E78.4
Hyperlipidemia, Unspecified	E78.5
Hyperuricemia without Signs of Inflammatory Arthritis and Tophaceous Disease	E79.0
Essential (primary) Hypertension	I10
Atherosclerotic Heart Disease of Native Coronary Artery without Angina Pectoris	I25.10



## REFERENCE RANGE\*

CoQ10  
(µg/mL)

**0.36-1.59**

*\*Reference range for population not on CoQ10 supplementation.  
Levels need to be higher to show therapeutic effect.*

### Treatment Considerations

*These treatment considerations are for educational purposes only. Specific treatment plans should be provided and reviewed by the treating practitioner.*

✓ **Assess dietary intake of CoQ10.**

- Dietary sources of CoQ10 include animal products such as beef, pork or chicken, and vegetables such as spinach, cauliflower and broccoli.

✓ **Consider CoQ10 supplementation.**

- If currently taking, consider adjusting dosage and retest in 1-2 months.

✓ **Assess ApoA1 and/or HDL levels.**

- If low, consider treatment with niacin or fenofibrate therapy.

### References

1. Caso G et al. Effect of coenzyme Q10 on myopathic symptoms in patients treated with statins. *Am J Cardiol.* 2007; 99: 1409-1412.
2. Mabuchi H et al. Effects of CoQ10 supplementation on plasma lipoprotein lipid, CoQ10 and liver and muscle enzyme levels in hypercholesterolemic patients treated with atorvastatin: A randomized double-blind study. *Atherosclerosis.* 2007; 195: e182-e189.
3. Toyama K et al. Rosuvastatin combined with regular exercise preserves coenzyme Q10 levels associated with a significant increase in high-density lipoprotein cholesterol in patients with coronary artery disease. *Atherosclerosis.* 2011; 217: 158-164.
4. Dadabayev AR et al. Apolipoprotein A1 regulates coenzyme Q10 absorption, mitochondrial function, and infarct size in a mouse model of myocardial infarction. *J Nutr.* 2014; 144: 1030-1036.

