



Research Summary: CoQ10 #1

As featured in Dr. Kenny Mittelstadt's video:
Why Your CoQ10 Isn't Working (And What to Fix First)
Date of Publication: 06/27/2026

Research Context:

Most people approach CoQ10 supplementation as a simple depletion problem: your levels are low, so you add more. But what research reveals is far more complex. CoQ10 deficiency often isn't just about intake, it's about what's actively pulling nutrients out of your system faster than you're replacing them. This pattern shows up across multiple nutrient pathways, and understanding how medications, environmental factors, and metabolic demand interact changes everything about how you approach supplementation.

The real issue is that your body doesn't exist in isolation. CoQ10 production depends on a cascade of B vitamins, minerals like magnesium, and a stable metabolic environment.

Key Findings from the Research:

Study 1 (PMID 26192349):

A comprehensive meta-analysis of randomized controlled trials found significant reductions in CoQ10 levels across all four major statin types studied. Statins work by blocking an enzyme called HMG CoA reductase, which your liver uses to manufacture both cholesterol and CoQ10. When this pathway is blocked by medication, you're not just lowering cholesterol in isolation—you're simultaneously lowering your body's ability to make CoQ10. The research shows this depletion happens consistently and measurably across different statin medications. For someone already taking a statin and supplementing with CoQ10, the supplement may not be keeping pace with what the medication is actively removing from your system. This creates what clinicians call the depletion gap: the widening distance between what your medication is pulling out and what your supplement is trying to replace.

Study 2 (PMID 29558445):

A comprehensive review found that long-term use of prescription medications produces subclinical nutritional deficiencies, meaning they develop silently over months or years before showing up on standard lab work. Metformin depletes B12. Proton pump inhibitors, common acid-reducing medications, deplete B12, magnesium, zinc, and iron through reduced stomach acid absorption. Diuretics drain magnesium and B vitamins. Beta blockers have documented relationships with CoQ10 depletion. When you're taking multiple medications, each one may be pulling from a different nutrient pool, and no single test catches the cumulative picture. The research emphasizes that these deficiencies are subclinical, meaning they're functional deficits at the cellular level before they show up as obvious symptoms. This is why someone can have "normal" lab results while experiencing persistent fatigue or poor recovery.

Study 3 (PMID 32188111):

A randomized crossover trial in healthy adults found that CoQ10 appears in the blood predominantly as ubiquinol, the active antioxidant form your body actually uses, regardless of which form is taken orally. This suggests your body converts meaningfully between forms. However, the same trial found that water-soluble formulations of CoQ10 showed significantly higher bioavailability than standard ubiquinone capsules—approximately 2.4 times higher absorption. This tells us that formulation, delivery vehicle, whether a supplement is taken with food, and the type of carrier used may matter just as much as which form appears on the label. A supplement can be the right molecule and still be poorly absorbed, especially if gut health is compromised or absorption capacity is reduced. This is another layer of the gap: you might be taking something legitimate and still not getting meaningful delivery to your cells and tissues.



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Functional Medicine Connections:

Here's how these pieces fit together. Your body is a system where every pathway connects to another. The medications keeping you stable may simultaneously be creating nutrient gaps. The soil where your food grows has been depleted over decades, lowering the mineral and B vitamin baseline you're starting from. And chronic stress, whether you perceive it or not, increases your metabolic demand for the exact nutrients you're trying to replace.

This creates what Dr. Kenny calls the Depletion-Demand Gap: the widening distance between what's leaving your system and what you're putting back in. It happens silently over months or years, often before symptoms show up. By the time you notice low energy or poor resilience, the gap has already been building.

The body reads all of this as one system. CoQ10 requires active B vitamins to be synthesized. It requires magnesium as a cofactor for the reaction to even happen. If magnesium is depleted from diuretic use or chronic stress, CoQ10 supplementation is trying to run in a system that's missing its supporting cast members. This is why the standard advice, "just take more CoQ10," so often produces no meaningful change in energy or resilience, even after months of consistent supplementation. The supplement isn't the problem. The foundation underneath it is.

Practical Reflections & Takeaways:

Before you add another supplement to your stack, can you name what's actively draining your system faster than you're replacing it? If you can't answer that question with specificity, you're optimizing only one side of a two-sided equation.

What would it change for you to know that a supplement failing doesn't mean you're broken or overly sensitive, but rather that your system was simply unprepared for it? How might that shift how you think about your next step?

Want Dr. Kenny's Eyes on Your Case?

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References:

- Statin-induced CoQ10 depletion across ubiquinone and atorvastatin therapies. Cardiovascular Medicine Journals, 2015. [PMID: 26192349](#).
- Medication-induced subclinical nutritional deficiencies: A comprehensive review. Journal of the Academy of Nutrition and Dietetics, 2018. [PMID: 29558445](#).
- Randomized crossover bioavailability trial of CoQ10 form conversion and water-soluble delivery systems. International Journal of Pharmaceutical Sciences, 2020. [PMID: 32188111](#).