

CoQsol[®]



*A patented oil-based formulation
of CoQ₁₀ in the ubiquinone form,
with clinically proven enhanced
bioavailability*



SOFT GEL
TECHNOLOGIES, INC.

The Crucial Nature of CoQ₁₀

Coenzyme Q₁₀ (CoQ₁₀) is a vitamin-like substance found in virtually all cells of the human body, including the heart, liver, and skeletal muscles, and in most plant and animal cells.

- As an **antioxidant**, CoQ₁₀ protects proteins, LDL (“bad”) cholesterol, and mitochondrial DNA from oxidative damage.*
- As a participant in the production of **cellular energy**, CoQ₁₀ helps ensure the body’s biggest energy consumers — the heart and the brain — are well fed.*

Thanks to these two crucial functions, CoQ₁₀ helps maintain blood pressure already within normal limits,¹ supports the integrity of the heart muscle,² increases circulation to the heart,³ improves exercise capacity,^{4,5} and supports a normal heart rhythm.*⁶ Additionally, it may protect against mild memory problems associated with aging.*^{7,8}

Of course, none of these benefits can be realized if CoQ₁₀ isn’t absorbed — and research indicates that the body takes up only a small fraction of traditional powder-based (crystalline) CoQ₁₀.

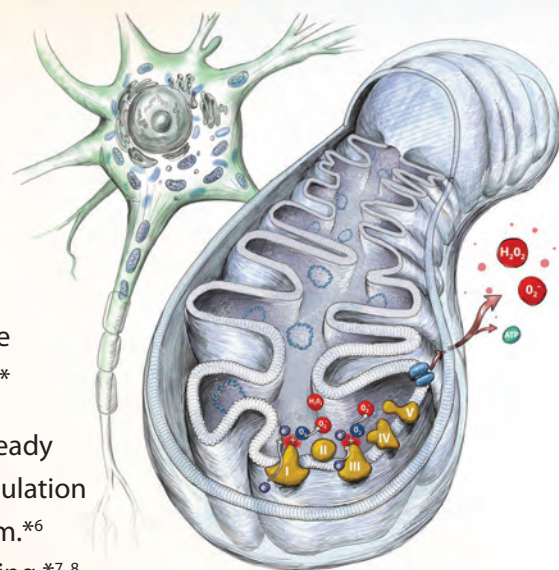


Illustration by N.R. Fuller, Sayo-Art

The CoQ₁₀ Absorption Dilemma

CoQ₁₀ is highly lipophilic (fat-loving) and in its powdered crystalline form is practically insoluble in water. This makes the absorption of typical CoQ₁₀ supplements:

- **Poor:** Less than 1% of orally administered CoQ₁₀ permeates the aqueous environment of the gastro-intestinal tract into the blood.⁹
- **Highly variable:** Some individuals absorb considerably less CoQ₁₀ than others.
- **Strongly dependent on stomach contents:** Foods rich in fat enhance absorption.

Making matters worse, CoQ₁₀ is a **large molecule**, contributing to its poor absorption. Plus, when CoQ₁₀ is produced commercially, crystals are formed that melt when they reach 118°F or 48°C. Upon cooling, CoQ₁₀ recrystallizes, which frequently results in even **larger crystals** — and further lowers CoQ₁₀ bioavailability.

* This statement has not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.





CoQsol®

The Suspension Solution: CoQsol®

CoQsol® from Soft Gel Technologies is a patented, oil-based formulation of CoQ₁₀ in the ubiquinone form with clinically proven enhanced absorption. How is this enhanced absorption achieved?

The answer is simple, and you may have learned it in high school chemistry: **Like dissolves like**. Because CoQ₁₀ is lipophilic, the scientists who developed CoQsol encapsulated CoQ₁₀ in an oil-based formulation to give it partial solubility, while adding specific antioxidants to stop recrystallization, thus enhancing its absorption.

CoQsol®: Ingredients

Ubiquinone CoQ₁₀ Provides Multiple Health Benefits

CoQ₁₀ functions as a carrier to transfer electrons across the membrane of the mitochondria — the energy-producing “factories” within cells — to drive production of adenosine triphosphate (ATP), or cellular energy.* Heart muscles have the greatest concentration of mitochondria — 5,000 per cell — which is one reason why CoQ₁₀ is so important for cardiovascular function.*

In its reduced form, ubiquinol, CoQ₁₀ acts as an antioxidant to protect proteins, LDL (“bad”) cholesterol, and mitochondrial DNA from oxidative damage.* Research has shown that CoQ₁₀ supplementation exerts a sparing effect on vitamin E in healthy subjects, helping to maintain its antioxidant state. It also reduces levels of lipid peroxidation — and thus supports cardiovascular health.*

Several factors can deplete CoQ₁₀ levels in the body:

- Aging
- Certain medications, such as statin drugs
- Certain disease states



Rice Bran Oil Allows for Lymphatic Absorption*

CoQ₁₀ crystalline powder does not dissolve completely in the lipid portion of the small intestine. The solution? Add fat. Not just any fat, however. Rice bran oil naturally contains gamma oryzanol, a plant sterol with lipid-like solubility. As a result, it enables the CoQ₁₀ in CoQsol® to be absorbed through the lymphatic system as a fat.*

Tocopherols and Carotenoids Prevent Recrystallization

A form of vitamin E, tocopherols enhance the biological function of CoQ₁₀, which in turn helps maintain the antioxidant state of vitamin E.* Carotenoids are antioxidant phytonutrients that give orange vegetables like carrots and sweet potatoes their characteristic hue. Both tocopherols and carotenoids interfere with the recrystallization of CoQ₁₀, allowing for better absorption.*

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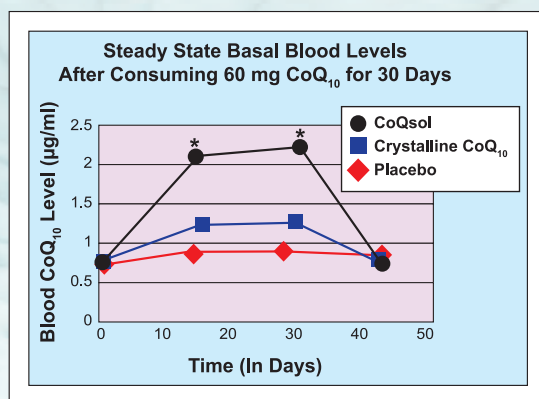
CoQSol® Has Enhanced Bioavailability Compared with CoQ₁₀ Crystalline Powder

In a randomized placebo-controlled study, 36 volunteers aged 22 to 58, with normal CoQ₁₀ levels and no previous history of CoQ₁₀ supplementation, were divided into three groups: CoQ₁₀ crystalline powder (in a two-piece hard shell capsule), CoQSol® (as a hermetically sealed softgel), or a placebo.

In the first phase of the study, researchers determined steady state blood levels of CoQ₁₀ by measuring fasting blood levels one week before supplementation began and again on days 0, 15, 30, and 45 (15 days after the end of supplementation). In the second phase of the study, peak absorption rate was determined by measuring fasting blood levels of CoQ₁₀ before and five hours after taking a single 30-mg dose of the nutrient.

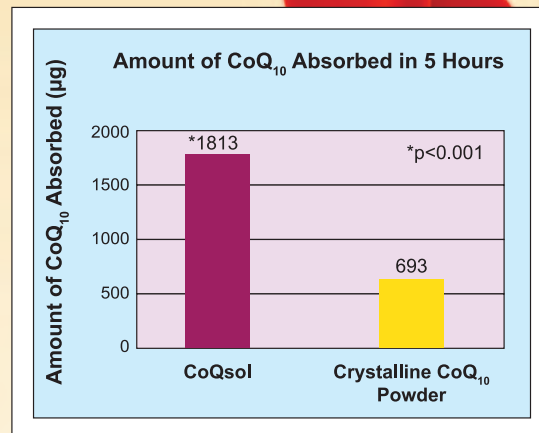
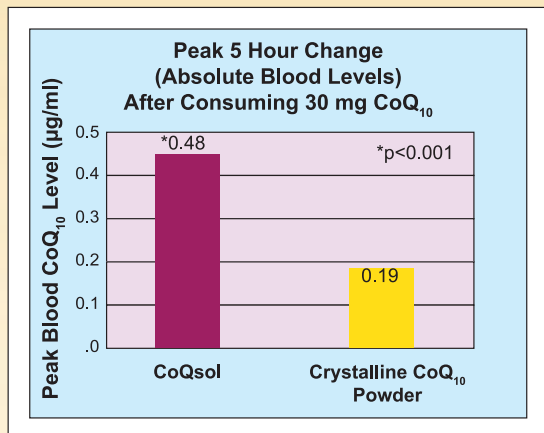
Phase I: Steady State Basal Blood CoQ₁₀ Levels Over 30 Days of Supplementation

- **2.2 x Higher Steady State Levels:** After 30 days, blood CoQ₁₀ levels of the CoQ₁₀ crystalline powder group rose by 76% (0.85 µg/ml to 1.5 µg/ml) whereas those of the CoQSol® group rose by 165% (0.85 µg/ml to 2.26 µg/ml) — meaning CoQSol® boosts blood levels of CoQ₁₀ 2.2 times better than CoQ₁₀ crystalline powder.
- **2 Weeks to Near-Peak Levels:** CoQ₁₀ levels approached peak plasma levels after two weeks and then rose more slowly for another two weeks.
- **On-Going Supplementation Needed:** Once supplementation ceased, plasma CoQ₁₀ levels dropped back to baseline levels after two weeks, indicating the need for on-going supplementation.



Phase II: Peak Absorption Rate 5 Hours After Ingestion

- **2.5x Higher Peak Absorption:** CoQ₁₀ levels of the CoQ₁₀ crystalline powder group increased 0.19 µg/ml (average absorption of 3.4 µg/ml), whereas those of the CoQsol® group increased 0.48 µg/ml (average absorption of 9.3 µg/ml) — meaning a single dose of CoQsol® increased blood CoQ₁₀ levels 2.5 times more than CoQ₁₀ crystalline powder.
- **2.6x Higher Total CoQ₁₀ Absorption:** After five hours, the CoQ₁₀ crystalline powder group had absorbed just 693 µg/ml CoQ₁₀, while the CoQsol® group had absorbed an impressive 1,813 µg/ml — 2.6 times more.



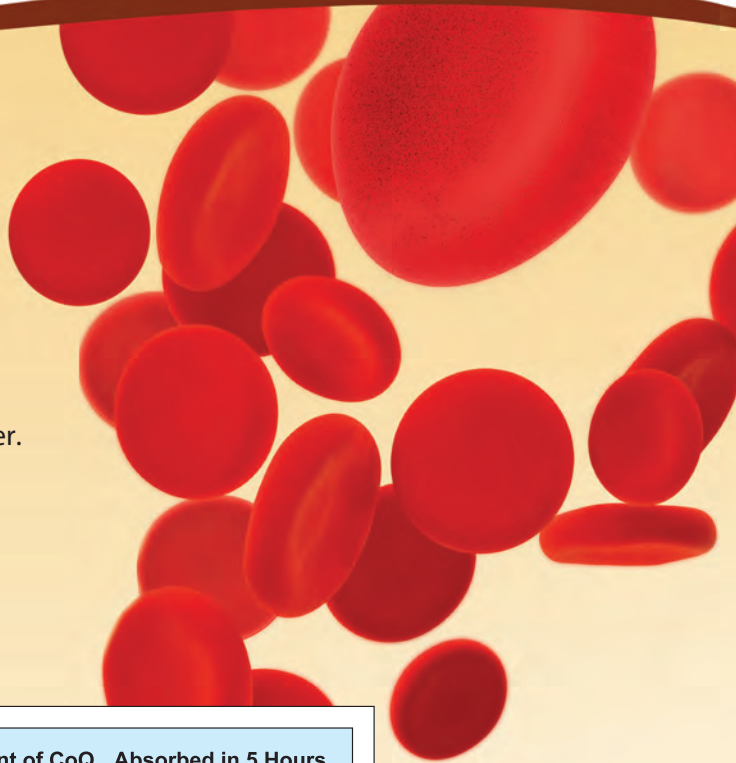
Better Absorption Means Increased Energy

When the subjects' CoQ₁₀ levels rose, the practical results of supplementation were clear:

- The **placebo group** experienced **no change in energy**.
- Only **30% in the CoQ₁₀ crystalline powder group** felt such an increase.
- Yet a full **83% of subjects in the CoQsol® group noticed an increase in energy.***

That's not surprising, because CoQ₁₀ feeds the mitochondria — tiny energy producers within cells.*

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Who Should Take CoQsol®?

CoQsol® is the perfect nutritional supplement for anyone who:

■ Is Under 40

With age, people produce less CoQ₁₀ and become less efficient at converting ubiquinone (the form of CoQ₁₀ featured in CoQsol®) to ubiquinol (the form used by the body to neutralize free radicals and create energy in the form of ATP). However, those who are young and healthy can easily make this conversion. Therefore, taking ubiquinol may be an unnecessary expense for this population.

■ Needs a boost in energy*

One of the primary benefits of CoQ₁₀ is to increase energy production.* In a randomized placebo-controlled study, 83% of subjects taking CoQsol® noticed an increase in energy, compared to just 30% of those taking CoQ₁₀ crystalline powder.*

■ Is Taking Statins

Certain medications, such as statin drugs, and certain disease states can deplete CoQ₁₀ levels in the body. Supplementation can restore CoQ₁₀ stores to normal levels (at least 0.8 µm/ml).

■ Wishes to strengthen cardiovascular or brain health*

Because of its role in energy production, CoQ₁₀ supports the functioning of organs with a high demand for energy, such as the heart and brain.* The heart muscle in particular is in constant need of a ready supply of energy to efficiently pump blood throughout the body. In fact, the majority of cardiac tissue is abundant in mitochondria requiring ample and consistent levels of CoQ₁₀ for proper functioning.*

■ Is looking for a non-dietary way to increase CoQ₁₀ levels

Most people don't eat enough foods containing CoQ₁₀ — such as fatty fish, organ meats, and whole grains — to raise blood levels of the nutrient. In fact, the average dietary intake of CoQ₁₀ is only 3-5 mg a day, much lower than what's needed to have any effect on CoQ₁₀ concentrations.¹⁰ CoQsol® has been clinically proven to achieve significantly higher plasma concentrations of CoQ₁₀ compared with CoQ₁₀ crystalline powder.

CoQsol® Delivery Systems

CoQsol® is an off-the-shelf formulation available in five different potencies — 10 mg, 30 mg, 60 mg, 100 mg and 200 mg softgels. As an oil-based suspension of CoQ₁₀ clinically demonstrated to provide superior absorption, CoQsol® is the ubiquinone CoQ₁₀ of choice for discriminating manufacturers.

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CoQsol®

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- ⁹ Not all CoQ₁₀ products are created equal. *Insiders Health*. Feb. 20, 2009. http://www.insidershealth.com/article_print/not_all_coq10_products_are_equal/2621
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CoQsol® is a multi-ingredient soft gelatin CoQ₁₀ formulation, which delivers powerful antioxidants vital to human health. This unique, synergistic blend of CoQ₁₀, natural vitamin E, Pro-vitamin A from natural beta-carotene, and rice bran oil is clinically proven to provide superior absorption.* It may also replenish CoQ₁₀ levels depleted by statin drugs.* Known as the "biochemical spark," CoQ₁₀ is a widely-studied nutrient that assists in normal heart function and promotes efficient cellular energy production.*

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CoQsol® Highlights

Available exclusively from Soft Gel Technologies, CoQsol® is a patented oil-based formulation of CoQ₁₀ with clinically demonstrated enhanced absorption.



Why CoQsol®?

- **Several factors can deplete CoQ₁₀.** Research shows that aging, certain medications such as statin drugs, and certain disease states can deplete CoQ₁₀ levels in the body. Therefore, for many people, supplementation is indicated to replenish CoQ₁₀ stores to normal levels.
- **CoQ₁₀ in powder (crystalline) form is difficult to absorb.** Because of its highly lipophilic (fat-loving) structure, CoQ₁₀ is practically insoluble in water, making its absorption poor, highly variable, and strongly dependent on stomach contents. Plus, the CoQ₁₀ molecule is large in size, contributing to its poor absorption, and when heated and re-cooled, even larger crystals are created.
- **Suspending CoQ₁₀ in rice bran oil improves its bioavailability.** Rice bran oil contains gamma oryzanol, a plant sterol with lipid-like solubility. As a result, it enables the CoQ₁₀ to be absorbed through the lymphatic system as a fat.*
- **Adding tocopherols and carotenoids prevents recrystallization.** Both tocopherols and carotenoids interfere with the recrystallization of CoQ₁₀, allowing for better absorption.*
- **CoQsol® has clinically proven enhanced bioavailability.** A randomized placebo-controlled human clinical trial found that compared to CoQ₁₀ crystalline powder, CoQsol® achieved:
 - 2.2x higher steady state blood levels of CoQ₁₀ after 30 days (60 mg/per day)
 - 2.5 higher peak absorption rate 5 hours after ingestion of a single dose (30 mg)
 - 2.6x higher total CoQ₁₀ absorbed 5 hours after ingestion of a single dose (30 mg)
- **CoQsol® Increases Energy.*** A full 83% of subjects in the human clinical trial who were taking CoQsol® noticed an increase in their energy levels, as opposed to 30% taking powdered CoQ₁₀ and no change for those taking placebo.*

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Sales Inquiries:
sales@soft-gel.com

Soft Gel Technologies, Inc.®

6982 Bandini Blvd., Los Angeles, California 90040

Toll Free: (800) 360-SGTI Phone: (323) 726-0700

Fax: (323) 726-7065

www.soft-gel.com

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