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LifeExtension®

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Are You Absorbing Enough CoQ10?



In 1983, the Life Extension Foundation introduced coenzyme Q10 to the United States. The recommended dose at that time was to take only 10 mg three times a day. This dose was based on what Japanese doctors were then prescribing to cardiac patients who derived benefits with no side effects when taking this quantity of CoQ10.

As more research on CoQ10 was conducted, doctors began to use higher doses, with corresponding greater benefits. Cardiac patients today typically take 100-300 mg of CoQ10, while successful studies in Parkinson's patients have used 360 mg to 1200 mg of CoQ10 a day.

The most publicized study on Parkinson's patients showed a direct correlation to the dose of CoQ10 and its beneficial effect. This study showed that 300 mg a day yielded only marginal effects, while 1200 mg a day showed an astounding 44% reduction in disease progression compared to the placebo group. Parkinson's patients receiving this high-dose CoQ10 also demonstrated an improved ability to perform daily living tasks.¹

Based on an increasing volume of published scientific findings, it appears that higher intake of CoQ10 is desirable.¹⁻⁸ One question a consumer would ask is whether higher doses are affordable? A question that new members may ask is why CoQ10 is so important?

The good news is that a new emulsification technology has been shown to significantly increase blood levels of coenzyme Q10 compared to previous versions. This means that taking 100 mg of this new emulsified CoQ10 supplement provides the body with what used to take a lot more coenzyme Q10 to achieve. For those seeking the benefits of higher doses, this new supplement provides ultimate absorption for no more money than previous CoQ10 supplements.

As far as why it is so important for aging humans to supplement with coenzyme Q10, a succinct description of CoQ10's primary mechanism of action appears below.

CoQ10 and the Mitochondria

For any cell in the body to exist, it must produce its own energy in order to maintain basic metabolic functions such as taking up and utilizing nutrients, synthesizing new proteins and discarding waste material. In response to systemic cellular energy deficit, the organism first encounters health disorders and will then die.

Without adequate coenzyme Q10, the ability of cells to utilize energy substrates declines precipitously. The end result is the development of multiple disorders characteristic of normal aging.

About 95% of cellular energy is produced from structures in the cell called mitochondria. The mitochondria have been described as the cell’s “energy powerhouse” and the diseases of aging are often referred to as “mitochondrial disorders.”

Coenzyme Q10 is incorporated into the mitochondria of cells throughout the body where it facilitates and regulates the transformation of fats and sugars into energy. A large body of scientific evidence shows that CoQ10’s ability restore mitochondrial function has a profound effect on one’s overall health.⁹

Heart cells have a high-energy demand, and many clinical studies have investigated the effect of CoQ10 on cardiac function. Efficacy has been shown in studies when CoQ10 was used for congestive heart failure, coronary artery occlusion and valvular disorders.¹⁰⁻¹⁵ Scientists have also found that CoQ10 provides benefits to other organs whose cells require high-level energy metabolism such as the brain and kidneys.¹⁶⁻¹⁸

The following highlights from a study published in the Proceedings of the National Academy of Sciences⁷ provides some insight as to how important coenzyme Q10 is to the brain:

- The administration of coenzyme Q10 to middle-aged and old rats resulted in the level of CoQ10 increasing by 10% to 40% in the cerebral cortex region of the brain. This increase was sufficient to restore levels of CoQ10 to those seen in young animals.
- After two months of CoQ10 supplementation, mitochondrial energy expenditure in the brain increased by 29% compared to the group not getting CoQ10. The human equivalent dose of CoQ10 to achieve these results was 100-200 mg a day.
- When a neuro-toxin was administered, CoQ10 helped protect against damage to the striatal region of the brain where dopamine is produced. This is the part of the brain that is afflicted by Parkinson’s disease.
- When CoQ10 was administered to rats genetically bred to develop amyotrophic lateral sclerosis (Lou Gerhig’s disease), a significant increase in survival time was observed.

The conclusion by the scientists who authored the National Academy of Sciences paper was:

“CoQ10 can exert neuroprotective effects that might be useful in the treatment of neurodegenerative diseases.”

The Startling Decline in CoQ10 Levels With Aging

It is known that the use of “statin” cholesterol-lowering drugs reduce coenzyme Q10 synthesis in the body, but the effect of aging on CoQ10 deficiency is much more profound.

For example, findings from studies on statin drugs showed an average 25% reduction in CoQ10, whereas studies on aging showed an average 57% reduction in CoQ10 levels in seven different tissues in the body.¹⁹⁻²³ The chart on the next page reveals the striking CoQ10 deficiencies people suffer as they age.

Tissue Affected	Percent Decrease of CoQ10	Published Study
Heart Muscle Wall	72%	(Biofactors. 1999;9(2-4):291-9) ²¹
Pancreas	83%	(Lipids. 1989 Jul;24(7):579-84) ²²
Epidermis (skin)	75%	(Biofactors. 1999;9(2-4):371-8.) ²³
Kidney	45%	(Lipids. 1989 Jul;24(7):579-84) ²²
Liver	17%	(Lipids. 1989 Jul;24(7):579-84) ²²
Heart	58%	(Lipids. 1989 Jul;24(7):579-84) ²²
Adrenal gland	50%	(Lipids. 1989 Jul;24(7):579-84) ²²

Those afflicted with degenerative diseases also demonstrate CoQ10 deficiency states ranging from 30% in cancer²⁴ to 65% in Type II diabetes.²⁵

It is clear from multiple published studies that aging results in a significant decrease in coenzyme Q10 levels throughout the body, which can be restored with orally ingested coenzyme Q10 products.⁹ These findings make

CoQ10 one of the most important nutrients for people over 30 to supplement with.

Obtaining The Highest Blood Levels of CoQ10

It is well established that only a certain percentage of ingested nutrients are actually absorbed into one's bloodstream. This is not a problem since the suggested dosing of supplements is adjusted to reflect the fact that absorption is not 100%.

When it comes to expensive nutrients like coenzyme Q10, the amount absorbed into your bloodstream is a critical factor. Low absorption rates mean more CoQ10 has to be taken to achieve optimal blood levels.

Scientists have recently discovered that higher doses of CoQ10 are needed to achieve desired results. This means consumers are faced with having to swallow more expensive CoQ10 capsules to derive maximum benefits.

We are pleased to announce the discovery of a new emulsion technology that dramatically increases the absorption of coenzyme Q10. Controlled studies show that this enhanced emulsion system results in almost double the blood levels of CoQ10, but does not cost any more than previous CoQ10 supplements.

More CoQ10 in the Blood Without Having to Swallow More Capsules

When scientists measure blood levels of coenzyme Q10, the unit of measurement is "micrograms per milliliter" of blood, which is expressed in abbreviated form as "ug/mL". 26-27

Life Extension tested a group of individuals who were not taking CoQ10, and their blood levels were 0.79 ug/mL. After four weeks of taking 100 mg of the previous oil-based CoQ10 softgel, blood coenzyme Q10 levels increased 38% to 1.09 ug/mL.

In the group getting 100 mg of the new emulsified CoQ10 supplement, blood levels shot up 87% to 1.47 ug/mL after only four weeks. This increase represents more than double the effect (i.e. 87% coenzyme Q10 blood increase with the new emulsified softgel versus 38% for the previous product).

What's more, we tested the new emulsified CoQ10 against a very expensive coenzyme Q10 formulation that claims to increase blood CoQ10 levels by six fold after three weeks. The results showed that the new emulsified formula performed equally as well as this very expensive CoQ10 formula. We plan to conduct more tests to further validate these findings, but the initial study shows that consumers can now obtain the superior-absorbing benefits of a very expensive CoQ10 supplement at a much lower cost.



To put this into better perspective, we tested 300 mg of this new emulsified CoQ10 supplement on another group of people whose baseline levels were 0.66 ug/mL. After four weeks, the mean coenzyme Q10 blood level increased by 336% to 2.22 ug/ml.

The significance of this is that the first successful Parkinson's study found that it required blood levels of 4 ug/mL of coenzyme Q10 to achieve maximum results (44% reduction in disease progression). In order to attain these high blood levels (4 ug/mL), study participants had to eat four oil-emulsified wafers a day, each wafer containing 300 mg of CoQ10 (or 1200 mg a day of CoQ10).¹

Based on our recent findings, if people were to take only 600 mg of the new emulsified CoQ10 supplement, they would attain blood levels of about 4.44 ug/mL, which is more than double (on a per milligram basis) the absorption of the higher cost CoQ10 wafers.

People taking this new enhanced emulsion supplement attain coenzyme Q10 blood levels that would require much higher doses of regular CoQ10 products. For the consumer, this new emulsified CoQ10 formula reduces the "cost per absorbed milligram" significantly. This means more people can afford to consume the potencies of CoQ10 needed to derive optimal benefits.

What Is The Ideal Dose of CoQ10?

In 1983, the medical literature stated that 30 mg a day of coenzyme Q10 was potent enough to have therapeutic benefit in those with existing heart problems.

Since 1983, daily doses in excess of 100 mg of CoQ10 have been used to achieve effects in clinical studies of those suffering from several different types of heart ailments, kidney failure and neurological disorders.

As people age, their natural synthesis of CoQ10 slowly declines. When people take “statin” cholesterol lowering drugs, CoQ10 synthesis can be reduced even further.²⁹⁻³⁰

Based on a consensus of the current scientific literature, it would appear wise for aging humans to supplement with at least 100 mg of a regular coenzyme Q10 capsule each day. Higher intakes of CoQ10 could produce greater benefits.³¹

With the availability of the new highly absorbable coenzyme Q10, it becomes much more affordable to supplement with greater doses. For those seeking the higher doses now being recommended by more scientists, one of the new emulsified 100 mg capsules would provide an efficient and economic method of increasing blood levels of coenzyme Q10. There is also a 200-milligram strength of this new enhanced emulsified CoQ10 for those seeking maximum blood levels.

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