



## ➔ Product Review ⇐

January 2025 #390

### ***UBIQUINOL (COQH SELECT®) VS. UBIQUINONE (COENZYME Q10 SELECT®) – WHICH PERFORMS BEST CLINICALLY (THE ANSWER MAY SURPRISE YOU)***

#### ***INTRODUCTION***

During my early days when I was just beginning to learn about clinical nutrition and supplementation (The late 70s and early 80s), my most invaluable mentor was someone many of you know or know of, the brilliant Harry O. Eidenier Jr. Ph.D. For me, having been enmeshed for years in the world of conventional medicine as it relates to dentistry and dental practice, this was an incredibly exciting time when I tried to read as much as I could on clinical nutrition and supplements as well as attend as many seminars and symposia on the subject as possible.

One key lesson I learned very quickly, thanks to Harry, was that to be a top-notch clinical nutritionist, it was important to be a top-notch diagnostician, particularly as it relates to assessment of laboratory tests, with blood chemistry being the main focus. Fortunately, during the late 70s and early 80s, Harry was regularly teaching evening and weekend seminars on blood chemistry interpretation.

All these years later, what do I regard as the most important lesson from these seminars? Interestingly, that lesson does not involve blood chemistry directly. Rather, I fondly remember one particular seminar where one of the very

sharp and astute students pointed out to Harry that what he stated in this seminar was in direct contradiction to what he had stated in a previous seminar. If I were in Harry's shoes, I know for me, like many others, embarrassment and a loss for words would have been my most likely response. Not Harry, though.

In his typical smooth, in-command fashion, he simply stated that, since the last seminar, he had learned more. All these years later I have never forgotten that most important of lessons – there is no need to be embarrassed and ashamed of being wrong as long as efforts are being made to expand the knowledge base. Of course, efforts to expand the knowledge base has its risks, the biggest of which may be discovering that what was thought to be the final word on any subject may, instead, subsequently be determined to be the wrong word.

Of course, it is never easy and somewhat embarrassing to admit an error. Fortunately, thanks to that lesson I learned from Harry all those years ago, I have come to realize that it is not a source of embarrassment but pride to point out I was able to replace old “knowledge” with new and improved “knowledge” that comes from updated research and clinical feedback from brilliant clinicians such as you.

As we enter a new year (2025), my 40<sup>th</sup> year in the supplement industry, I now take pride in telling you that, based on some fairly current published research, I find that I have been in error in recommending ubiquinol (CoQH Select®) in all scenarios over ubiquinone

(Coenzyme Q10 Select®) with the assumption that ubiquinol would always yield better clinical outcomes.

### **RESEARCH COMPARING UBIQUINOL AND UBIQUINONE FROM A CLINICAL OUTCOME STANDPOINT**

As I suggested above, the paper “Comparison of coenzyme Q10 (Ubiquinone) and reduced coenzyme Q10 (Ubiquinol) as a supplement to prevent cardiovascular disease and reduce cardiovascular mortality” by Fladerer and Grollitsch (Fladerer JP & Grollitsch S. *Curr Cardiology Reports*, Vol. 25, pp. 1759-1767, 2023), takes an unflinching look at one of the unquestioned icons of the supplement industry for the last few years, that ubiquinol performs better clinically compared to ubiquinone.

The first quote I would like to feature from this paper makes it clear that the authors performed a thorough and exhaustive examination of the published literature on the two nutrient forms:

**“We identified 238 randomised controlled trials for ubiquinone and 35 for ubiquinol, which were sorted by medical application. Twenty-three studies of ubiquinone and 5 of ubiquinol were included to analyse their potential to prevent cardiovascular disease. These 28 studies were compared according to the ability of the given supplements to reduce cardiovascular mortality in patients with heart failure.”**

Next, I would like to feature a quote that provides basic information on the chemistry and physiology of ubiquinone and ubiquinol:

**“Coenzyme Q<sub>10</sub> is a redox molecule occurring in the human body in 2 bioactive states, ubiquinone (CoQ10) as oxidised state and ubiquinol (CoQH2) as reduced state. Both redox forms of Coenzyme Q<sub>10</sub> are bioactive and important for human health.”**

In addition, contrary to the opinion of many, the two forms are not precisely interchangeable metabolically. In contrast, each possesses different metabolic properties:

**“CoQ10 is essential for cellular adenosine phosphate (ATP) energy production as it shuttles electrons from complexes I and II to complex III of the mitochondrial respiratory chain. CoQH2 is an important lipid-soluble antioxidant preventing peroxidation of the low-density lipoproteins in the blood circulation with additional anti-inflammatory activity.”**

Next, Fladerer and Grollitsch point out that, in addition to the above, there is a significant misunderstanding about which form has higher bioactivity:

**“A slightly better water solubility and a lack of understanding about absorption and transfer of CoQ10 and CoQH2 have led to misleading interpretations pushing CoQH2 as a more bioactive form.”**

In fact, CoQH2 is quite unstable and must be converted to CoQ10 before it can even be absorbed:

**“Therefore, it is important to notice that (I) CoQH2 is very unstable and under normal conditions is oxidised to CoQ10, (II) CoQH2 has to be oxidised to CoQ10 before it can be absorbed by enterocytes, and (III) the bioavailability of CoQ10 and CoQH2 mainly depends on crystal dispersion status and carrier oil composition.”**

Finally, it should be noted that the human body only synthesizes CoQ10, not CoQH2:

**“Interestingly, only CoQ10 is synthesised in the human body by way of the mevalonate pathway, an essential metabolic pathway including byproducts like cholesterol and other isoprenoids.”**

Thus, the fairly simplistic and fairly common narrative, which I certainly propagated over the years, stating that the extra cost of CoQH2 was justified due to enhanced absorption and formation of bioactive metabolites does not reflect reality. In fact, as suggested in the above quotes, the less expensive CoQ10 is much more metabolically efficient.

**Criteria used by the authors to ascertain whether CoQ10 or CoQH2 demonstrated superior clinical performance.**

To determine which form functioned better clinically, each was considered in relationship to several clinical presentations:

**“To determine differences in medical application of CoQ10 and CoQH2 supplementation, we assigned the studies to the following applications: antioxidative activity, bronchial diseases, cancer, cardiovascular diseases, eye diseases, hepatic diseases, Huntington, infections, infertility, inflammation, mental health, metabolic syndrome, migraine, mitochondrial dysfunction, pain, Parkinson, physical health, polycystic ovary syndrome, pregnancy, presbycusis, statin associated pain, and others.”**

**Study results**

As you will see, contrary to popular assumptions that one form is clearly superior to the other, Fladerer and Grollitsch found that each form demonstrated advantages:

**“By comparison of applications, CoQ10 can be identified as a promising agent to treat cardiovascular diseases while CoQH2 can be preferred for treatment of inflammation and antioxidative activity. These findings go along with the biochemical description of CoQ10 and CoQH2.”**

With the above in mind, the authors point out:

**“According to these results, we conclude that based on the medical data available, CoQ10 is the more promising supplement to prevent cardiovascular diseases and to treat patients with heart failure. Further arguments for CoQ10 are the additive effect in combination with selenium, and the reduction of adverse effects of statin therapy by supplementation with CoQ10.”**

**Reasons for the positive outcome studies for ubiquinol (CoQH2)**

Of course, those of you who employ CoQH2 regularly may counter the above negative attitude towards CoQH2 with the several positive studies that have been published.

Fladerer and Grollitsch go on to report some very practical concerns about these studies. First and foremost, these studies tended to use higher dosage recommendations compared to the CoQ10 studies. This is of significant concern from a patient management standpoint given the substantially higher cost of CoQH2 compared to CoQ10:

**“...most CoQH2 studies used much higher concentrations than CoQ10 studies. CoQ10 studies included in this research test concentrations between 60 and 300 mg/day with one exception using 400 mg/day. Studies with CoQ10 with selenium additive test between 100 and 200 mg/day. In contrast to that, CoQH2 studies included test concentrations between 300 and 600 mg per day. The only CoQH2 study using 300 mg/day test concentration included only 39 patients, and no beneficial cardiovascular effects could be observed. Taking a closer look at major studies including at least 200 patients reveal extreme differences between CoQ10 and CoQH2.”**

The authors go on to comment on the dosage concerns:

**“According to the higher concentration (600 mg/day instead of 200 or 300 mg/day) used in CoQH2 studies and the weaker recorded benefit for patients with heart failure, the usage of CoQ10 supplementation is recommended in therapies of heart failure and cardiovascular disease in general.”**

Of course, some will point out that CoQH2 is converted to CoQ10 so outcomes should be fairly similar between the two. Fladerer and Grollitsch comment on this:

**“Interestingly, there are differences in clinical outcomes of CoQ10 and CoQH2 despite the fact that CoQ10 can be converted to CoQH2 and vice versa in the human body by at least five enzymes. Possible reasons are a different stomach transit and duodenal absorption.”**

With all of the above in mind, the authors conclude:

**“It has to be noted that there is a lack of clinically relevant trials and misleading marketing claims**

associating CoQH2 with cardiovascular benefits. Comparing the work of Morisco et al. and Q-SYMBIO, KISEL-10 studies with the study of Pierce et al. lead to the following outcomes: (I) CoQ10 supplementation alone or in combination with selenium reduced cardiovascular death in patients with heart failure. This is not recorded for CoQH2. (II) Test concentrations leading to cardiovascular benefits are much lower in CoQ10 studies than in CoQH2 studies. (III) Positive long-term effects are only observed in CoQ10 studies. In these studies, reduced cardiovascular mortality is recorded even after 12 years. Based on the existing literature, the authors recommend CoQ10 instead of CoQH2 to treat and prevent cardiovascular disease in patients with heart failure.”

### ***SOME FINAL ANECDOTAL COMMENTS***

First, I feel it is important that I make you aware of the results of the Fladerer and Grollitsch study which makes it clear that, for many patients, CoQ10 will be the obvious choice from both an efficacy and cost standpoint.

Nevertheless, with the old dictum that every patient is different in mind, I know that many of you have been purchasing **CoQH Select®** for years and have reported excellent patient outcomes. Thus, if you are getting superior results with **CoQH Select®**, far be it from me to tell you to switch. For, the bottom line is the bottom line and, therefore, even with the results of the Fladerer and Grollitsch study in mind, we will continue to carry **CoQH Select®** as long as you choose to purchase it.

Second, though, in closing, I do want to leave you with an anecdotal report, for whatever it is worth. When I brought up this study to our chief medical officer, Dr. Nik Hedberg, and our outstanding clinical advisors, Drs. Howard Benedikt and Joe Mather, the comments were unanimous. All three have chosen to use **Coenzyme Q10 Select®** for years because, in their hands, it is their opinion that **Coenzyme Q10 Select®** yields clearly superior clinical results compared to **CoQH Select®**.

Of course, as I mentioned, this is strictly anecdotal. Nevertheless, given the proven clinical expertise of these three functional medicine practitioners, you may want to keep their thoughts in mind.

### **CoQH Select® - 60 Softgels**



### **Coenzyme Q10 Select® - 60 Veggie Caps**

