

Carotec Health

Research Confirms Tocotrienols Are Most Important Vitamin E Fractions

(The following is an edited transcript of an interview with W. H. Leong, a chemical engineer and vice president of Carotech Inc., the Malaysian company that is the world's largest and leading producer of tocotrienols from virgin crude palm oil. Mr. Leong appeared on the *True Health* radio program with Tom Valentine. This interview has been updated February 2009 to reflect recent research on Tocotrienols.)

Tom—The tocotrienol fractions of vitamin E are not very well known, how are they different from the familiar alpha tocopherol form of the vitamin?

WH—Vitamin E is now considered to be the generic name describing both the tocopherols and tocotrienols. These two forms each have four divisions based upon the structures of the heads or chromanol rings; these are designated alpha, gamma, beta, and delta. They are distinguished from one another by their side chains. Tocopherols have a saturated tail, called the phytol, and tocotrienols have unsaturated tails.

Tom—This is essentially the same chemistry that distinguishes saturated fats from unsaturated fats. Vitamin E is a fat, or a fat-soluble nutrient. How long have people known that palm oil was a good source for the tocotrienols?

WH—Even though palm oil has been used in Asia for ages, especially in Malaysia, Indonesia and China, no one knew about the tocotrienols until 1995 when our company came into existence and we started production. Palm oil was traditionally processed into cooking oil, but the process destroyed vitamins and other nutrients found naturally in the oil. Carotech was the first company in the world to commercially extract the to-



cotrienols from virgin crude palm oil in 1995.

Tom—So it actually is a very new thing. Thanks to you we have a brand new and abundant source of vitamin E and this source is excellent for everybody. You call it Tocomin® Suprabio™ (TSB). In fact, you now have clinical research showing this form of vitamin E to be effective in supporting a healthy cardiovascular system especially involving something called carotid stenosis. Tell us what that means?

WH—Carotid stenosis is a condition where the blood flowing to the brain through the carotid artery is restricted. The carotid artery is the main artery that supplies blood to the brain. Stenosis is a condition where arteries are blocked by cholesterol deposition, cholesterol plaque and clots. Researchers found that patients with carotid stenosis taking 200 mg per day of TSB had increased blood flow within six months—92% of those patients had an increased arterial blood flow. In comparing them to the block able group—this is a double blind study—none of the patients showed similar improvement. As a matter of fact, half of those placebo patients had a worse condition of the carotid stenosis. This is the first observation

where we actually show that a natural ingredient—a natural form of vitamin E in a tocotrienol complex has reversed a blockage.

Tom—That is interesting especially in the fact that the placebo couldn't open it up any, physical activity had to be involved—a genuine physical activity in the artery to cause that opening in the blockage and increase flow. The placebo effect, which is a very famous effect, had no effect whatsoever.

WH—Correct.

Tom—That is outstanding. Very few studies have beaten placebo so badly. To be considered scientific, you have to be able to explain the mechanism of action. Do you have any ideas on that yet?

WH—Currently there are a couple of thoughts. One of them, which I believe is the most accurate, is due to the unsaturated phytyl or tail of the tocotrienol molecule. Remember, as we mentioned earlier, the difference between the tocopherol and the tocotrienol? While they share a lot of similarities, the only difference between these two forms of vitamin E is in the unsaturated nature of the tocotrienol tail. That little tail in tocotrienol has 3 double bonds, or three unsaturated fats. Tocopherol tails are all saturated fat. So in a very loose term the tocotrienol can be defined as the unsaturated form of tocopherol.

Tom—Now in my understanding and laymen's understanding a saturated fat isn't as biochemically active as an unsaturated fat, so the tocotrienol being unsaturated is more active than the tocopherol.

WH—Precisely; that is a very good explanation. Unsaturated vitamin E, i.e. tocotrienol, is a much more potent form of vitamin E. And this un saturation allows tocotrienol to break up the blockage in the cholesterol plaque.

Tom—One could say the active wiggling tail has more hole digging ability than the straight tail.

WH—Correct.

Tom—I read that a recent published study which showed that gamma-tocotrienol was the most potent form of tocotrienol for cardio protection. Contrary to what was previously thought to be delta-tocotrienol.

WH—Yes. This is a new and exciting study at the University of Connecticut School of Medicine where the researcher studied the effects and mechanism of tocotrienols cardio protective function especially on their ability to improve post-ischemic ventricular function (heart attack) and reduce myocardial infarct size in rats:

Gamma-tocotrienol was the most effective in:

1. Improving post-ischemic ventricular function
2. Reducing myocardial infarct size

3. Reducing the percentage of apoptotic cardiomyocytes (dead heart cells)

4. Partially protecting the proteasome during ischemia

5. Producing the least MDA content in heart

6. Significantly enhancing Akt Phosphorylation (improve survival).

This is an interesting finding with far reaching consequence as the gamma-tocotrienol form (including gamma-tocopherol) is the most abundantly found in our diet.

Alpha-tocotrienol was the second most protective in improving the effects shown above. Interestingly, delta-tocotrienol was the least potent. Except from being able to inhibit deactivation of proteasomes, delta-tocotrienol did not show significant cardio protection. The results indicate that contrary to popular belief, delta-tocotrienol is not the most cardio protective form of tocotrienol.

Tom—What does that mean to a consumer who wants to take tocotrienol for cardio protection?

WH—This study has proves that gamma-tocotrienol and alpha-tocotrienol have the highest cardio protective function but not delta-tocotrienol. Similar to what is found in nature (palm oil, rice bran oil, wheat, etc) Carotech's TSB has the highest levels of gamma- and alpha-tocotrienol, making it the preferred choice of mixed tocotrienols for nutritional supplements for heart health.

What is most important is to take a tocotrienol supplement that has all the

four forms of tocotrienol, as naturally found in our diet. Not a single form of tocotrienol such as delta-tocotrienol.

Tom—Do the tocotrienols work synergistically?

WH—Each form of tocotrienol works best in different part of the body/organs and most important is that all of them work synergistically as a team to confer the maximum and optimum health benefits.

So many published papers have shown (and we have been warned time and time again) that there is no single compound that is the most effective when comes to dietary / food supplementation. Look at the alpha-tocopherol and beta-carotene debacles. Taking what nature produce is the best way for supplementation.

And only TSB natural full spectrum palm tocotrienol complex provides all the 4 forms of tocotrienol (alpha, beta, gamma, and delta-tocotrienol) in significant levels; most importantly, TSB has been used in human studies.

Tom—Amazing. Before we touch on other amazing benefit of tocotrienols, what is the latest research with regards to tocotrienol and cardio protection?

WH—Carotech is pleased to announce data from a random-

“It's most important to take a tocotrienol supplement that has all the four forms of tocotrienol, as naturally found in our diet. Each form works best in different parts of the body”

ized controlled human clinical trial recently published in Archives of Pharmacal Research, which demonstrated TSB's ability to reduce arterial stiffness in healthy adults after 2 months oral supplementation.

In this blinded endpoint clinical trial, 36 healthy volunteers were randomized to receive: a placebo, one softgel, three softgels or five softgels of TSB daily for 2 months. Measurement such as arterial compliance (Carotid Femoral Pulse Wave Velocity and Augmentation Index) and other parameters such as blood pressure were taken before and after treatment. Plasma tocotrienols concentration was also measured.

The results showed that treatment with TSB produced significantly higher plasma concentrations of tocotrienols compared to placebo. After 2 months of supplementation, statistically significant improvement in Augmentation Index (up to 8.7% reduction from baseline) was observed in all the tocotrienols supplemented groups. Significant improvement in Pulse Wave Velocity (up to 10% reduction from baseline) was also seen in subjects who received three and five softgels Tocomin® Supra-Bio™ self-emulsifying tocotrienol complex.

Tom—What does that mean to a consumer?

WH—Decreased arterial compliance or increased arterial stiffness is a predictor of cardiovascular events even in healthy individuals. A reduction in both Augmentation Index and Pulse Wave Velocity, as showed by supplementation with TSB indicates better arterial compliance, thus reducing the risks of cardiovascular diseases.

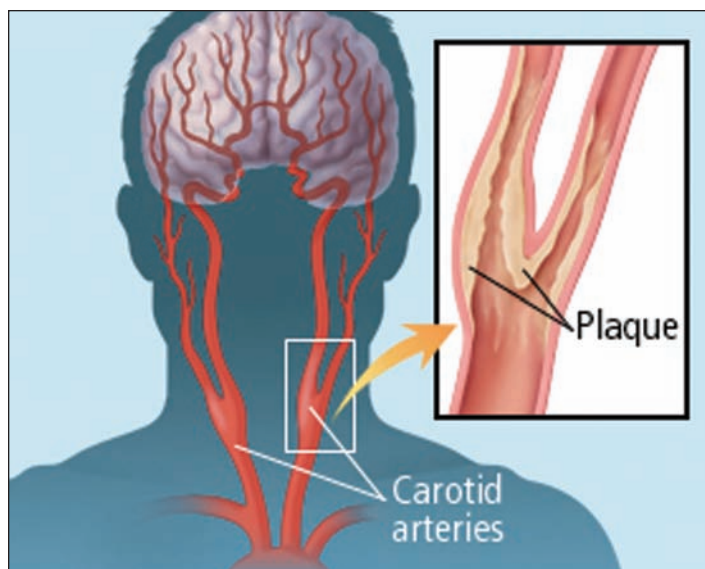
Tom—We now recommend 1-2 softgels per day for general maintenance and 3-5 softgels per day for intensive uses.

WH—That is absolutely correct.

Tom—Now, you also have statements about women's health. There is exciting news about the inhibition of estrogen-positive and estrogen-negative breast cancer cells. I want to go there. Most doctors don't know what a tocotrienol is.

WH—This is another new area where we were basically looking to where tocotrienol are best used in our body; which organs and so forth. One of the main organs where we found high levels of tocotrienol activity was in the mammary tissue. The questions led into our research and currently we have six different independent studies underway—three in America, one in Canada, one in UK and one in Malaysia. You will see different independent researches published that show tocotrienol has this ability to inhibit both positive and negative estrogen. This is an exciting research for tocotrienol as well.

Tom—It is every bit as exciting as the one for the carotid artery because they are finding something that health nuts, like myself, knew 40 years ago. That is, when you take a knife and cut into a women's breast to remove a cancer your chances of spreading it and proliferating those cells are extremely enlarged. In fact there is new research coming out saying that surgery does not do as good as they previously thought because of releasing the cells



Carotid stenosis is a condition where the blood flowing to the brain through the carotid artery is restricted. Researchers found that patients with carotid stenosis taking 200 mg per day of Tocomin® Suprabio™ had increased blood flow within six months—92% of those patients had an increased arterial blood flow.

and allowing them to proliferate. Here you have a study showing that the Tocomin® is able to curb estrogen activity that may promote the proliferation of those cells.

WH—In fact the results are so compelling and interesting that the Malaysian government together with Carotech, Inc. in collaboration with a Malaysian Pharmaceutical Company have invested approximately five years in human studies looking into TSB, and breast cancer in the patient.

We will be releasing the results of this first human clinical trial on tocotrienols and breast cancer. This study with 240 stage-one breast cancer patients was conducted in collaboration between Carotech and the Malaysia Palm Oil Board with various hospitals in Malaysia. It was a 5-year study and the patients were given TSB soft gel capsules.

The initial results showed interesting and positive results in term of survival rate, recurrence rate and the up-regulating of a few other major immune biomarkers - that overall led to the increase in survival and recurrence rate.

Tom—That is terrific because breast cancer is a major disease. Since there is a relation between the breast tissue and the skin, I imagine that your tocotrienols are very good for skin. Vitamin E is known as a necessary vitamin for protecting the skin.

WH—That is a good observation Tom, as a matter of fact there are researches that have already shown that if you take tocotrienol orally as a diet supplement your skin gets the benefit. Tocotrienol is a much more potent antioxidant. It has been shown to be about 40 – 60 times more potent than the regular vitamin

E, the regular tocopherol. And being a much more potent antioxidant it is not surprising that tocotrienol is the key first line of defense against those free radicals that are generated in our skin.

And another exciting observation from pharmacokinetic studies on tocotrienols is that the body naturally and preferentially accumulates them in the strata corneum (the uppermost 5 micron layer of the skin) of the skin. What this means is that for someone who takes tocotrienol supplementation, the tocotrienol levels in his/her skin is much higher than the regular tocopherol vitamin E. It is just plain good for skin nutrition vis-a-vis anti-aging.

Tom—Another interesting finding is the ability of tocotrienol to promote hair growth. Carotech was granted a US Patent No : 7,211,274 for tocotrienol in promoting hair growth.

WH—Prof. K.H. Yuen and colleagues from the University of Science Malaysia conducted the randomized, double-blind, placebo-controlled study to evaluate the effect of TSB on hair growth.

28 subjects were randomized to receive either one softgel of TSB or placebo, twice daily after food over a period of 8 months. Hair count in the area (2 x 2 cm) of hair thinning and weight of hair (20 strands) were conducted at each visit.

At the end of the supplementation period, all subjects in the tocotrienol group had positive response, recoding in the number of hair in the evaluation area.

An average of 41.8% increase in the numbers of hair was observed after 8-month tocotrienol supplementation, with:

- 8 volunteers (40.0%) showing > 50% hair growth
- 1 volunteer (5.0%) showing 25-50% hair growth
- 9 volunteers (45.0%) showing 10-25% hair growth
- 1 volunteer (5.0%) showing < 10% hair growth

However, no statistically significant difference between pre- and post-supplementation was detected in term of weight of hair.

Supplementation with TSB may promote hair growth and increase the number of hair in individuals experiencing hair loss.

Dr. Nicolas Perricone, the famous dermatologist who wrote the best seller – The Wrinkle Cure, advocates the use of tocotrienols ("High Performance Vitamin E" as he calls it) for skin nutrition anti-aging.

Tom—It makes sense—the saturated versus the unsaturated thing. There is still another area. This is exciting to me. The human brain has more fat than anything else. Dr. Michael Schmidt, who is the author of "Brain Building Nutrition", was also a guest on this program, and it seems that your tocotrienol also helps the brain avoid the glutamate induced neurodegener-

ation and protects the brain against stroke-induced neurodegeneration.

WH—Yes, this is one of the latest and newest research areas for tocotrienol. This is research that is carried out and spear-headed by the Ohio State University Medical Center in collaboration with Carotech. We started this research about five years ago and have since published more than five papers on the potent protective effects of tocotrienol against glutamate induced nerve degeneration and stroke neurodegeneration. The National Institute of Health looked at the results and they got excited and contacted the principal researcher, Prof. Chandan Sen and asked him for more results as well as information. That resulted in funding from the National Institute of Health under the division of National Institute of Neurological Disorder and Stroke that they set up a fund of \$1.2 million to the Ohio State University Medical Center to look further into how tocotrienol protects glutamate induced neurodegeneration.

Tom—Please explain glutamate induced neurodegeneration.

WH—Glutamate induced neurodegeneration is a physiological condition that occurs in the neurons of brain cells when the brain has suffered a concussion or when there is a stroke, or lack of oxygen to the cells. Trauma to the brain cells tends to produce excessive amounts of glutamic acid. Because of this high

level of glutamate instead of helping the neurons, it tends to induce neuron cell death. Tocotrienol has the ability not only to inhibit the cell death from this glutamate but also reverses its effect.

Tom—That is surely important. Let me try to summarize in simple terms. We have a lot of head trauma in accidents in the US. There is a known physical degeneration of the neurons in the brain due to accumulation of glutamate, which is a necessary functioning part of the body in the brain. So the palm tocotrienols have the ability to stop the over indulgence of the cells with the glutamate because of its tremendous ability as an antioxidant?

WH— Not just an antioxidant. Further research shows that tocotrienol actually up regulates a certain gene to produce protective processes for the brain cells. Not only as an antioxidant, but also it regulates the expression of the gene in the neurological cell. The principal researcher looked for a way to explain how tocotrienol could protect the brain cells and what he found was not only does this active form of vitamin E protect the brain cells from glutamate induced neurodegeneration; it is a thousand times more potent than the regular vitamin E at protecting the brain cell.

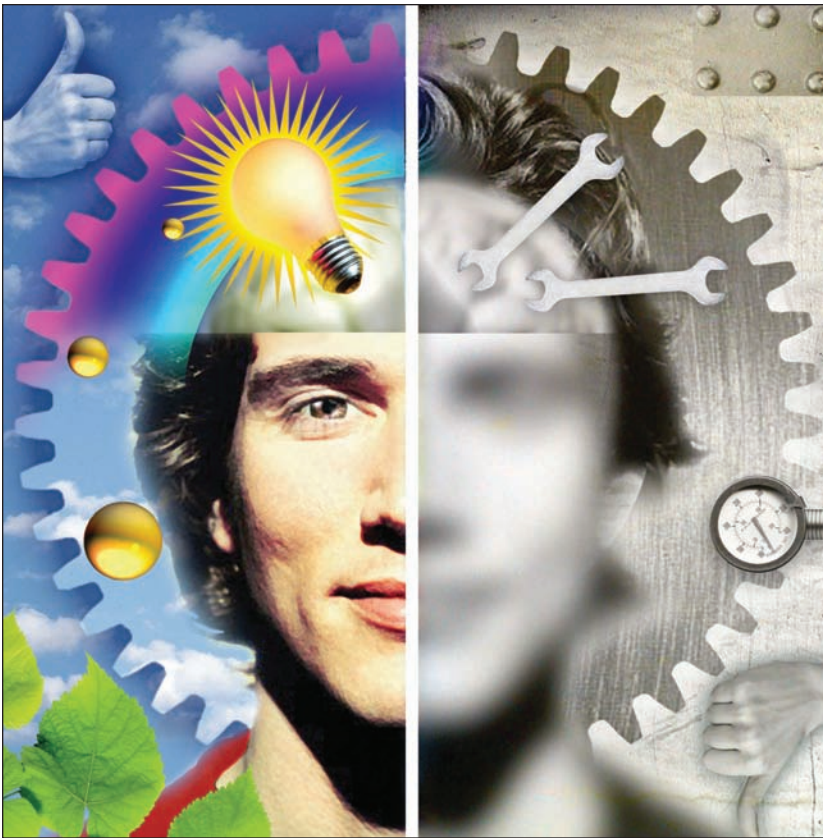
Published in the prestigious peer-reviewed STROKE journal of the American Heart Association, oral supplementation of TSB to spontaneously hypertensive rats led to increased tocotrienols

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TOCOTRIENOLS & THE BRAIN

According to W.H. Leong, a chemical engineer and the vice president of a major provider of natural supplements in Malaysia, glutamate induced neurodegeneration is a physiological condition that occurs in the neurons of brain cells when the brain has suffered a concussion or when there is a stroke, or lack of oxygen to the cells. Trauma to the brain cells tends to produce excessive amounts of glutamic acid. Because of this high level of glutamate instead of helping the neurons, it tends to induce neuron cell death. Tocotrienol has the ability not only to inhibit the cell death from this glutamate but also reverses its ill effects.

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level in the brain. The rats supplemented with TSB showed higher protection against stroke-induced injury compared to controls (non-supplemented group). This study demonstrated that oral supplementation of TSB acts on key molecular checkpoints (c-Src and 12-Lipoxygenase) to protect against glutamate- and stroke-induced neurodegeneration and ultimately may protect against stroke in vivo.

In another study, published in the *Journal of Neurochemistry*, 2006, Prof. Sen's team determined that tocotrienols protect against stroke-induced neurodegeneration by acting as an antioxidant at higher concentrations, and non-antioxidant protection at lower levels.

The only way to get tocotrienols into the brain is through supplementation over a period of time. Prof. Sen has proven that tocotrienols cross the blood-brain barrier. Hence, it is prudent to continue taking the tocotrienols to ensure that the brain continues to have significant level of tocotrienols and would confer the potent protection if one were stricken with stroke. And being an antioxidant, it does protect the brain from free-radical damage, which may leads to other neurological-diseases such as Alzheimer's.

Our research showed tocotrienol is more potent than tocopherol in many respects. However, the tocopherol is obviously full of properties necessary for many functions within the body, but for the specific protection we have investigated, the tocotrienol is the vitamin E to take.

Tom—We have a mixed tocopherol product called “The ‘E’” which has a high amount of Gamma tocopherol and 200 IU of alpha tocopherol. We advise customers to take TSB 8 hours apart from “The ‘E’” if they seek to optimize cholesterol levels. We do say the two can be taken together but if one has high cholesterol and seeks to use tocotrienols to help lower and better their ratio, it is best to space them apart.

WH—Yes. You are correct. There were two studies published in journals (Qureshi AA, et al., "Dietary alpha tocopherol attenuates the impact of gamma-tocotrienol on hepatic 3-hydroxyl-3-methylglutaryl coenzyme A reductase activity in chicken", *Journal of Nutrition*, 1996; 126: 389 - 394 and Khor HT, et al., "Effect of administration of alpha-tocopherol and tocotrienols on serum lipids and liver HMG CoA Reductase activity," *Int. J. Food Sci. Nutr.*, 2000; 51: S3-11), which found that high level of alpha-tocopherol (above 30% ratio) diminishes tocotrienols' ability to inhibit the HMG Co A Reductase enzyme and hence its ability to lower total serum cholesterol especially the LDL-Cholesterol.

This attenuation phenomenon is only relevant and applies to tocotrienols' effect in lowering cholesterol and not other unique biological effects of tocotrienols such as antioxidant and reversal of arterial blockage in Carotid Stenosis patients / arteriosclerosis, antioxidant, reducing monocyte adhesion molecules, stroke-induced injuries, etc.

TSB's ratio of tocopherol is only 22%—well below the limit of 30% as shown by Dr. Qureshi. Hence, the alpha-tocopherol in

TSB does not attenuate the ability of tocotrienols to inhibit HMG-CoA Reductase. Also, the presence of phytosterols in TSB would work synergistically with the tocotrienols in lowering total serum cholesterol. The phytosterols prevent absorption of diet cholesterol whereas the tocotrienol prevents production of cholesterol in the liver.

However, taking tocotrienols for other unique biological activities (as mentioned above) along with tocopherols should not pose any problems. The advantage is that one is getting the full spectrum of vitamin E—all the tocotrienols (including alpha-, beta-, gamma- and delta-tocotrienols)—from palm tocotrienol complex as produced by nature.

We have to bear in mind that cholesterol reduction is only one of the many significant health benefits of tocotrienols. There are other health benefits—such as reversal of Carotid Stenosis, potent antioxidant, inhibition of breast cancer cells, potent protector of neurons, skin nutrition - all of which are not affected by tocopherol.

As such, if the customer wants to take TSB for cholesterol reduction and needs to also take the regular tocopherol, I would suggest to take the “gamma-tocopherol plus mixed tocopherol” at a different time; 8 hours apart is sufficient. Space them out—take the mixed tocopherols in the morning and tocotrienols in the evening; also for the reason that the body produces most of the cholesterol at night.

Tom—You have created a patented way for the substance to be absorbed into the body because it won't do any of these things research says unless it gets in there and does the job—it has to get into the blood stream. I understand you have recently made improvements that mean better absorption and utilization?

WH—Yes, that is right. Just two years ago we had only the straight extract taken from palm oil. One of the main problems with the oil extract was the absorption. What we have done is work together with another company, one of the largest certified pharmaceutical companies in Malaysia, to look into ways to increase the absorption of tocotrienols from the oil extract. After two and one-half years of R&D, we developed the formulation called the Tocomin® Suprabio™ system where the absorption of tocotrienol is increased between 200 to 300% compared to a regular tocotrienol oil extract. It is a patented system unlike the regular tocotrienol oil extract.

Most of tocotrienol products in the market are produced from a regular tocotrienol oil extract. It is an oil extract. And being an oil extract, it has been proven that its absorption (ie : bioavailability) is erratic and depends on the intake of foods, to facilitate ab-

sorption.

Tom—That is amazing, with the highest level of gamma-tocotrienol and boosted by this patented tocotrienol system to increase its bioavailability, TSB is different from the other forms of tocotrienol in the market.

WH—Yes. With TSB, one can reach blood therapeutic level at a lower dosage and hence lower cost. In addition, we must not forget the fact that TSB allows the body to reach blood level at a faster rate and consistent manner. That's what makes the US Patented TSB different from any normal oil tocotrienol extract.

Tom—So the person taking the capsule is getting 2 or 3 times more than what he got before, and the price came down at the same time, that's very good. I'm going to guess that because it is a fat-soluble product, it has to have more fat with it in order to be absorbed. I am going to assume then that your patent has something to do with an emulsifier that allows tocotrienol to be better absorbed and metabolized.

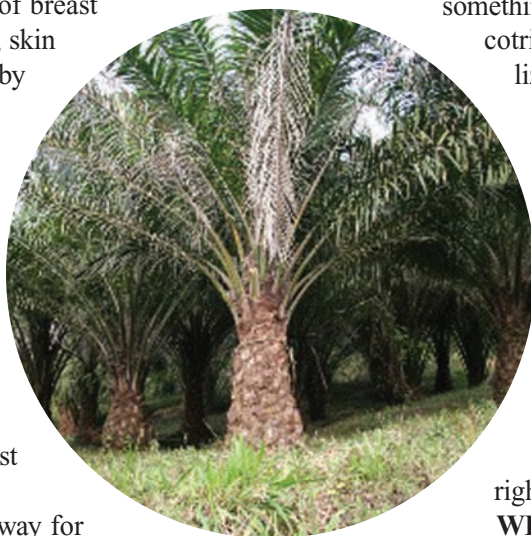
WH—You are correct. If you read the label of most multi vitamins or fibro-nutrients, they suggest you take the vitamin and fibro-nutrient together with food to increase absorption. One does not need to take the TSB together with food because of our patented process. If you take it on an empty stomach you are assured of absorption as well.

Tom—Yes, I understand that it goes right into the lymphatic system.

WH—Correct again. There are basically two mechanisms for how nutrients are absorbed into the system. One, most of us know, is through the GI tract and the liver. The other is through the lymphatic system. Our patented system has a property that promotes absorption of tocotrienol in the lymphatic system, as well as through the liver system. Our challenge was to find a way to increase absorption so that a therapeutic dose could be attained without higher cost.

Tom—There is a new published study about absorption and metabolism of Tocotrienols, is there not?

WH—Yes, in the May 2006 issue of the journal Antioxidant & Redox Signaling and in the June 26 issue of Journal of Neurochemistry our latest studies in cooperation with Ohio State University Medical Center were published. Essentially, it has been hypothesized that orally consumed Tocotrienols may not be delivered to the organs due to inefficient transport of this form of vitamin E by tocopherol transfer protein, which has a greater affinity for tocopherol. A group of women were given 400mg of our soft gel capsules, and then their blood was sampled at intervals of 2, 4, 6 and 8 hours following supplementation. Peak plasma tocotrienol levels were found to be from 12 to 30 times



higher than levels needed to prevent stroke-related neurodegeneration as determined by earlier research.

Tom—So, even though the transport protein likes tocopherol better, the oral tocotrienols from TSB were efficiently delivered to the system.

WH—Correct. In the second study, the researchers determined that Tocotrienols protect against neurodegeneration by acting as antioxidant at high concentration and non-antioxidant protection at lower levels. Neurological damage can be caused two different ways—through the presence of homocysteic acid, which in excess amounts can cause vascular and neuronal lesions associated with cardiovascular disease, and the fatty acid linoleic acid, which can directly stimulate damaging free radical activity. Fatty acids are related to stroke as they rapidly accumulate when a clot in a vessel stops blood flow to the brain, causing irreversible brain injury.

The researchers treated rodent neural cells with extremely low concentrations, nanomolar level, and these cells avoided the cell death associated with toxicity caused by homocysteic acid. But to reduce free-radical activity and resulting neurotoxicity caused by fatty acid linoleic acid, the scientists found a higher concentration of tocotrienol was needed. Tocotrienol does not exhibit antioxidant properties until it reaches a concentration 10 to 25 times stronger than the concentration that prevented the cell death signal.

Tom—So you have learned that Tocotrienols, when administered orally, can reach concentrations needed to serve both protective functions?

WH—Yes. In previous studies we proved Tocotrienols pass the blood-brain barrier and at subattomole quantities it protected neurons from glutamate challenge. This neuroprotective property of tocotrienol is not shared by tocopherol.

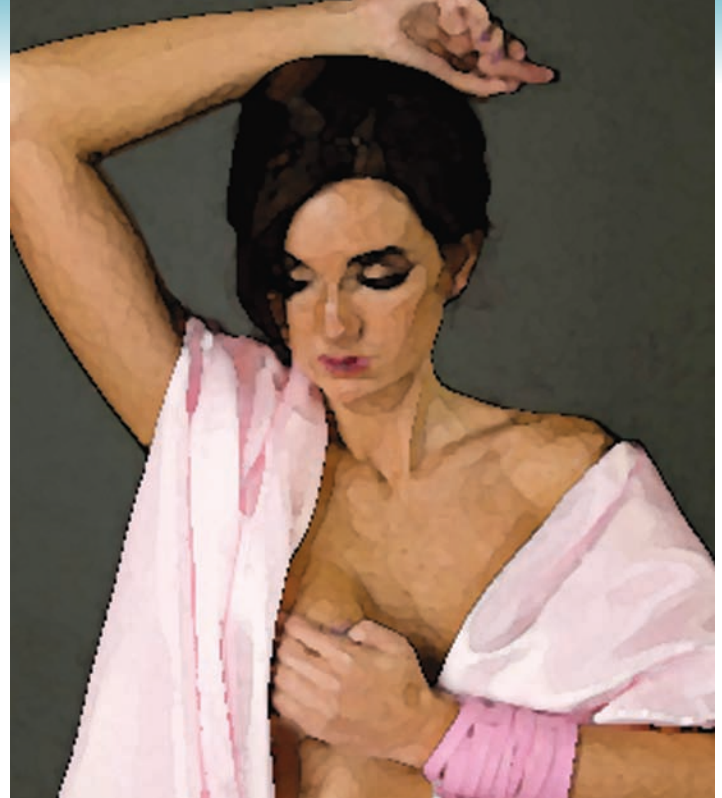
Tom—I am amazed with all the unique health benefits of tocotrienols and the patented TSB which ensures increased absorption into the circulatory system to get these benefits. What are other new developments with regard to tocotrienol and within Carotech?

WH—There is so much new research with tocotrienols. More and more new and unique health benefits are being discovered, as we speak, by researchers all over the world. It is an exciting growth phase for tocotrienols and for Carotech in particular.

I am pleased to share with your readers the following:

i) Largest Human Clinical Trial with Tocotrienol - We have recently started a double-blind, placebo-controlled human study—the largest ever on tocotrienol—with 400 subjects over 3 years—to look at various cardiovascular end-points. This study is a joint-collaboration between MPOB (Malaysian Palm Oil Board), local universities and the Malaysian Armed Forces.

The clinical trial will look at total lipid profiles, apolipoprotein B-100, lipoprotein (a), C-reactive protein, plasma antioxidant



An astounding study has shown that Tocomin® shows the ability to curb estrogen activity that otherwise could promote the proliferation of breast cancer cells. Investigators are awaiting the results of more tests involving Tocotrienols and women's health.

profiles, plasma lipid peroxidation, oxidative metabolites and plasma tocotrienol levels on the supplemented and placebo group.

ii) We have also started a new human clinical trial - on tocotrienol and wound-healing and surgical scars. The study—"Efficacy of Natural Vitamin E Tocotrienol on the Treatment of Surgical Scars", and being conducted at the Ohio State University Medical Center.

These two studies are listed in the FDA website: www.clinicaltrials.gov

iii) With the new GMP (Good Manufacturing Practices) ruling coming into effect in June 2009, I am pleased to inform your readers that Carotech has already achieved GMP certification (Good Manufacturing Practices) in 2007. This certification is of important as Carotech is the first and only GMP-certified tocotrienol producer in the world.

Carotech has been operating under GMP guidelines for many years, but we see this official GMP certification as an important document to prove to our valued customers that we follow strict quality guidelines. In this age of uncertainty in sourcing products, it is very important to know that you can obtain outstanding TSB.

Because we're GMP-certified, customers can be assured that the TSB has the identity, strength, purity and composition purity.

Tom—We live and learn; thank you for an informative interview. ♥

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Buy 2 get 1 free \$24 **Code: MAGK2**
Buy 4 get 2 free \$40 **Code: MAGK4**



We know that Americans are deficient in magnesium because the medical research literature is full of citations saying so. For example, in November, 1995, Pharmaceutical Executive reported that up-to-date surveys found 72% of American adults take in less than the recommended daily allowance of magnesium and 38% were taking in less than half the RDA.

from your friends at Carotec Health!

NEW SALE ITEM!

MSM Capsules

120 capsules, 500 mg

Buy 2 get 1 free **\$22** **Code: UMK2**
Buy 4 get 2 free **\$34** **Code: UMK4**

Long before the late movie star James Coburn told the world that he owed his resurgent health to MSM, we were aware that it was so important to life and health that we called it The Universal Molecule™.

This organic form of sulfur is absolutely required by your body in order to cope with pain, to make strong, smooth and painless joints, ligaments, cartilage and muscles; it's also necessary for nails and hair growth and luster; for vibrant and strong skin and organ tissue. It is essential for natural protection against heartburn and strong stomach acid because it promotes robust tissue growth; and it is the key ingredient in the formation of immunoglobulin, which is vital for the production of antibodies and immunity.

And, if that isn't enough, sulfur is the fourth most abundant mineral in your body and without it you would not be able to remove and eliminate toxins from your cells. Sulfur helps make the cell membranes permeable so that fluids can flow freely in and out of the walls. This allows toxins to be removed, thereby reducing inflammation and promoting healing. However, every time your body removes invading toxins from your cells, it also removes the sulfur compounds that neutralized the toxin in the first place.



Garlic Bulb Extract — **NEW SALE ITEM!**

90 enteric coated tablets, each tablet 275 mgs

Buy 2 get 1 free **\$72** **Code: GARK2**
Buy 4 get 2 free **\$120** **Code: GARK4**



Nature's antibiotic and heart-helper. Each tablet equals 4 cloves of fresh garlic. Our garlic extract is as close to nature as possible. Flacshmann (owned by Frutarom) controls all aspects of manufacture with care. Flachsmann owns European garlic farms, avoiding fertilizers or pesticides. Their extraction process insures key enzymes aren't activated during manufacture, but rather are biologically available when you ingest the product.

Our product conforms to the standards of Germany's Commission E which is a regulatory body that "approves" herbs for health purposes. Please note: the United States FDA does not accept Commission E findings and garlic as a supplement is not approved for treatment of disease in the United States.

NEW SALE ITEM!

Hawthorne Berry Extract

120caps, 275mg

Buy 2 get 1 free **\$30** **Code: HBEK2**
Buy 4 get 2 free **\$48** **Code: HBEK\$**



Hawthorne Berry is a plant found in Eastern Europe. It has berries, leaves, and flowers, and all of the components have different chemistry, and that chemistry is helpful in the treatment of heart conditions. There are certain chemicals in Hawthorne Berry that help your cardiovascular system overall and help your heart work more efficiently.

Your heart is a muscle, and these components help your heart muscle beat better as well as more efficiently. So the net result is that more blood gets pumped to your body parts and your body just works better because it is getting more nutrients and oxygen from the blood that is being pumped.

Carotec's Hawthorne Berry extract comes in bottles of 120 capsules with eachcapsule containing 275 mg of Euromed's quality extract. Take one or two capsules daily with a glass of water, with or without meals, or as directed by a physician.

1-800-522-4279 TOLL FREE

Use Visa/MasterCard/Discover/AmEx

IMPORTANT NOTE: Not responsible for typographical errors. Offers may be rescinded at will. All sale and closeout items end Tuesday, March 31, 2009, 7 p.m. No exceptions. No refunds. No adjustments on prior purchases. All other Carotec policies apply. See order form for shipping & handling charges and free gift selections. Not responsible for typographical errors.

Popular Sale Products — 33% to 50% savings

Colon Support Formula — ON SALE

220 capsules

Buy 2 get 1 free \$50 Code: COK2

Well-known nutritional expert Dr. Terry Willard helped us design this powerful formula to help support great bowel health. So called “colon cleansers” have nothing on our Colon Support Formula. We believe Carotec’s Colon Support Formula is the best available on the market today.

Enada NADH — ON SALE

30 tablets per box, 5 mgs per tablet

Buy 2 get 1 free \$58 Code: ENK5

NADH is the key to cell energy and a great way to boost energy levels, stimulant free. NADH is biological rocket fuel. Hydrogen reacts with oxygen in our cells to produce energy.

Co-E1 NADH — ON SALE

30 sublingual tablets 20 mgs per box

Buy 2 get 1 free \$98 Code: ENK20

One Co-E1 lozenge may be taken as needed to help naturally boost performance for 3-5 hours when taken an hour before activities like jetlag, meetings, studying, workouts etc.

CLA: (Tonalin®) — ON SALE

90 soft gels, 800 mg CLA

Buy 1 get 1 FREE \$32 Code: TONK1
Buy 4 get 4 FREE \$116 Code: TONK4

A safe way to convert body fat to muscle, our CLA showed in published studies to reduce body fat significantly without regain. Tonalin® is a safe approach to weight management.

MaitakeGold 404® — ON SALE

60 capsules, 15 mgs

Buy 1 get 1 FREE \$65 Code: MGK1
Buy 3 get 3 FREE \$156 Code: MGK3

Maitake Gold 404® may fight breast cancer but is sold only as a dietary supplement for immune support. Contains 15 mgs of Maitake Gold 404® in a base of 10 organic mushrooms.

Olive Leaf Extract — ON SALE

90 capsules, 250mg 18% Oleuropein

Buy 2 get 1 FREE \$48 Code: OLK2
Buy 4 get 2 FREE \$76 Code: OLK4

Water extraction and the “Hyperpure” process make our extract the best for cardiovascular health. Material we use in Carotec Olive Leaf Extract is “absolutely top quality.”

Pantethine — ON SALE

60 capsules, 450 mgs

Buy 1 get 1 FREE \$39 Code: PANK1
Buy 3 get 3 FREE \$99 Code: PANK3

Studied extensively for maintaining optimal cholesterol and triglyceride levels and for curbing “aldehydes.” Carotec’s Pantethine is now in powder capsules. Price increase coming!

Nattokinase — ON SALE

120 capsules, 50 mg, 1000 FU, NSK-SD

Buy 1 get 1 FREE \$49 Code: NATK1
Buy 4 get 4 FREE \$169 Code: NATK4

Nattokinase has captivated alternative health practitioners because it “desludges” blood. Natto helps thin blood that’s too thick, but does not stop normal clotting function!

Purchase \$100 or more & get a FREE gift!

See the back page of the order form bound into this March Carotec sale catalog.

Popular Sale Products — 33% to 50% savings

Vitamin AD3 — ON SALE

120 softgels

Buy 2 get 1 free \$32 Code: VADK2

Revised for 2009: 10,000 IU Vit A, 2,500 IU Vit D3 in sesame oil per soft gel. Vitamin AD3 insures the benefits of sunshine to nourish your organs in case you don't get 45 minutes of daily sunlight. From building bones to hormonal health, Vitamin A and D help almost every body system.

EZ Eyes™ — ON SALE

60 softgels per bottle. 9 more mgs of Lutein, 4,467 more mgs of Zeaxanthin than previous formula, 15 mgs Lutein, 4.75 mgs Zeaxanthin.

Buy 1 get 1 free \$29 EZK1

Buy 3 get 3 free \$75 EZK3

Lycopene Plus — ON SALE

60 softgels per bottle. 5 mgs more Lycopene than previous formula, 15 mgs Lycopene, 10 mgs Beta Carotene & 5 mgs Alpha Carotene.

Buy 1 get 1 free \$31 LPK1

Buy 3 get 3 free \$78 LPK3

Neptune Krill Oil™ — ON SALE

60 softgels, 500 mgs Neptune Krill Oil™

Buy 1 get 1 FREE \$43 Code: K500K1

Buy 3 get 3 FREE \$111 Code: K500K3

Neptune Krill oil is truly one of a kind, having a perfect ratio of Omega 3 (DHA and EPA) as well as phospholipids and astaxanthin. Because of Krill's phospholipid content, all of Krill's constituents (such as EPA /DHA) need not be "converted" in your body to make them bio available—your body gets near perfect absorption with every soft gel.

ON SALE HERE . . .

Glucosamine HCL & Celadrin®

120 capsules • 375 mgs each
Glucosamine HCL & Celadrin®

Buy 1 get 1 free \$32 Code: OCK1

Buy 3 get 3 free \$89 Code: OCK3

BENEFITS OF CELADRIN, OSAMINE: Clinically shown for being fast acting—within 72 hours.

CELADRIN & GLUCOSAMINE: SUPER SYNERGY: The cause of wear on the joint area can be attributable to inflammation as well as insufficient lubrication and cell membrane fluidity. Glucosamine has been clinically studied to generally show an increase in the range of motion & relieve pain at the same rate of Ibuprofen. Glucosamine assists in the rebuilding cartilage & the overall structure of the joint and has shown moderate effects on people with osteoarthritis. Celadrin® provides continuous lubrication, repelling inflammatory chemicals. Celadrin® stops the cascade of inflammation and the assaults on the membrane which cause it to stiffen and be less effective. Celadrin® empowers glucosamine to perform faster and more efficiently in building joint cartilage. The dual action of Celadrin® & glucosamine provides rapid joint cushioning, quickly alleviates inflammation, builds cartilage and restores the entire joint area.

1-800-522-4279 TOLL FREE

Use Visa/MasterCard/Discover/AmEx

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‘Ubiquinol’ Hype De-Bunked Again

CocoQ-10® is still the best Q10—since 1996

Many customers are asking about a form of coenzyme Q10 (ubiquinone) called ubiquinol because so many newsletters and promotional tracts praise it in favor of Q10. We strongly advise our customers to keep taking our CocoQ-10®. We could jump on the hype-bandwagon and introduce it like others have but we refuse to indulge in fads or introduce a product simply because others have. We are not a “me-too” company.

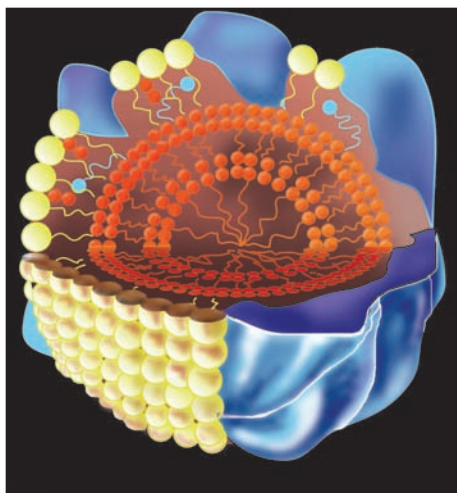
We have 2 major concerns with ubiquinol: Lack of stability and lack of human clinical trials. Stability—it is extremely difficult to maintain the stability of ubiquinol during manufacture, let alone in the body. Unstable ubiquinol reverts to ubiquinone (Q10); in other words, unstable ubiquinol offers no health advantage over Q10 and it is more expensive than proven Q10. Its effects are unknown because Q10 is natural and identical to the Q10 in your cells. Ubiquinol is converted from Q10 in the body.

Human clinical studies: Virtually all studies are done with what you know as Q10 (ubiquinone). Q10 (ubiquinone) is found naturally occurring in food sources—and is stable. Q10 is as close to nature as possible—it is proven.

We urge you to continue to take CocoQ-10®.

We realize a few notable health doctors and some leading companies are pitching ubiquinol as the latest and greatest, but, know Q10 is still the preferred form worldwide. Why does ubiquinol get so much hype? The manufacturer of ubiquinol made an outstanding natural Q10 for decades and interestingly, also makes ubiquinol. It may seem odd to some that the same company that is saying ubiquinol replaces Q10 still makes Q10, but, we believe that they introduced ubiquinol because competition drove Q10 prices lower than years before (and co-incidentally, after they built large manufacturing facilities for additional Q10 demand).

Dr. William Judy is a leading Q10 researcher who authored a white paper on “Coenzyme Q10 Facts or Fabrications” which includes statements made by ubiquinol hypesters as either FACT or FABRICATION, followed by Dr. Judy’s explanation. Here are a few relevant points:



The Dynamo of Life

In the illustration, the bright orange molecules in the core of the mitochondrion are coenzyme Q-10 molecules. This remarkable substance is responsible for controlling the totality of the body’s energy production.

FABRICATION

Ubiquinol has greater water solubility and much better absorption and much better absorption into the blood stream than does ubiquinone.

FACT

The addition of two hydrogen ions on the polar head of the ubiquinol molecule will not make it highly water-soluble or absorbed as a water-soluble molecule.

FABRICATION

Reduced Q10 (ubiquinol), an antioxidant remains in the reduced form when ingested and absorbed.

FACT

Reduced Q10 (ubiquinol) is highly unstable in the contents of the stomach and is converted to oxidized Q10 before absorption.

FABRICATION

The functions of ubiquinol in the body are more diverse than those of ubiquinone (Q10).

FACT

Ubiquinol functions in the body as an antioxidant and in the recycling of ubiquinone, vitamin E and vitamin C. Ubiquinone, through its synthesis of energy, is involved in all body processes requiring energy including energy synthesis, active transport, membrane and nucleotide stability, synthesis of enzymes, coenzymes, hormones, neurotransmitter synthesis and reuptake, ciliary activity in the upper respiratory systems, all muscle contractile functions, sperm production and motility, deactivation of muscle contraction, pumping action of sweat and other cutaneous glands, etc. In fact, ubiquinone (Q10) is possibly the hub around which life processes revolve in the human body.

FABRICATION

Clinical studies with Ubiquinol show it is superior to Ubiquinone.

FACT

In fact, ubiquinol became (commercially) available in 2006 and to date no clinical studies in human beings using Ubiquinol have been published in the peer reviewed scientific literature. An anti-aging study in genetic mutated mice has been described, but the role of the genetic mutations in these mice as they pertain to CoQ10 conversion are not understood. This is a concern since mice use CoQ9 as an energizer and antioxidant where human beings use CoQ10.

FABRICATION

Ubiquinol makes ubiquinone supplements obsolete.

FACT

In fact, hundreds of clinical studies show that ubiquinone is effective and still the choice of practicing cardiologists. Ubiquinone and ubiquinol are rapidly inter-converted back and forth, regardless of the form ingested.

CONCLUSION

In summary, many aggressive marketing campaigns introducing ubiquinol have created false and misleading claims that have only generated more confusion about CoQ10. The apparent lack of superior absorption, instability in the stomach, no clinical efficacy studies and the high cost of ubiquinol have to be considered when making a decision as to which CoQ10 form should be sourced.

While we have not subjected our CocoQ-10 to clinical study, we know that Q10 is better absorbed when emulsified in high quality oils. This is why we chose coconut oil long ago-and, a recent Japanese study using coconut oil emulsions showed that absorption was best with coconut oil. The Japanese used different vegetable oils. We theorized long ago that coconut oil would be best and it was gratifying to be vindicated. Clearly, not all Q10 supplements are the same. For one, we only use Japanese fermented Q10 and we mix it with quality coconut oils and medium chain triglycerides. Perhaps this is why our product got the attention of famed cardiologist Dr. Sinatra.

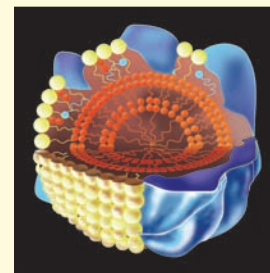
While we don't normally print testimonials or anecdotal information, we thought we'd share a report we heard from one of our long standing customers who happens to be a patient of renowned Cardiologist, Dr. Steven Sinatra (whom we applaud for his popularization of Coenzyme Q10, Magnesium, L-Carnitine and D-Ribose).

During a consultation where he reviewed our customer's extensive blood tests, Dr. Sinatra noted our customer's Q10 levels were impressively high.

Dr. Sinatra asked how many milligrams of his Q10 product (Q-Gel) our customer used. Dr. Sinatra was surprised to hear it wasn't his product that resulted in high blood levels, but in fact, our CocoQ-10®. ♥

Absorbable CocoQ-10® on Sale!

CAROTEC'S COCOQ-10® comes in two versions: 100 mg and 200 mg softgels, both in a proprietary blend of medium chain triglycerides and organic coconut oil. Carotec's Q-10 is manufactured in Japan by fermentation—the resulting Q10 is identical to our body's Q-10.



Coenzyme Q-10 controls cellular energy output. High levels of Q-10 are necessary to support virtually all body functions. The heart, brain and liver are organs, which require tremendous “energy” so it's no coincidence that Q-10 is found in abundance in these organs. Clinical research has shown quite clearly that Q-10 especially supports the perpetually working heart muscle tissue. It is known that stress, aging, illness and drugs deplete levels of Q-10. Deficiencies may bring a wide variety of problems, so it pays to insure adequate supplies to maintain optimal health.

Q-10 also plays a vital role in supporting healthy immune function—which is yet another reason it's so suitably combined with Lauric acid-rich coconut oil.

Coenzyme Q-10 is not the easiest nutrient to absorb and metabolize in the body; it is delicate and sensitive to light and biochemical electricity. Great care must be taken when preparing it for encapsulation. Coenzyme Q-10 is a “fat soluble” nutrient that works optimally in the body only when combined with quality fat. That is why we have chosen the very finest “fat” to be the bearer of Q-10 to your cells. In recent years, Q-10 researchers realized that the nutrient must be combined with a “nutritious fat” to get the maximum benefit from supplementation. Carotec's CocoQ-10® uses Japanese Q10 made by fermentation (identical to our body's Q10). Q10 is the ultimate cardiovascular, neurological, and immune product. Regular daily use 200-400 mg; intensive up to 1600 mgs daily. ON SALE NOW. ♥

CocoQ-10® 200 mg

60 softgels, 200 mgs Natural Q10

Buy 1 get 1 free \$71 **Code: Q2K1**
Buy 4 get 4 free \$264 **Code: Q2K4**

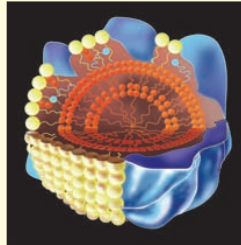
CocoQ-10® 100 mg

100 softgels, 100 mgs Natural Q10

Buy 1 get 1 free \$67 **Code: Q1K1**
Buy 4 get 4 free \$249 **Code: Q1K4**

How Much CoQ-10 Does Your Body Need?

New research on CoQ-10 is urging people to take more of this key nutrient for optimal health. A “healthy” person over 40 would be well advised to take a minimum of 200 mg a day. Heart patients are being told to take up to 1000 mg a day from high quality supplements, with 800 mg as an “average” dose for people over 60 with various chronic problems.



We realize Q10 is expensive—and this is why we take great care to make sure you are getting the best available. We list the following studies as examples of real studies done which clearly demonstrate Q10 is a great supplement. Until stability problems with ubiquinol are overcome and studies demonstrate could demonstrate it is “better” than Q10, we refuse to jump on the hype bandwagon.

Virtually every cell in the human body contains CoQ-10. It is concentrated in the mitochondria located within the cells. The heart, brain and the liver contain the greatest concentrations of CoQ-10. Its importance to health and energy cannot be overstated because it is primarily responsible for the cell’s production of ATP—adenosine triphosphate—the chemical of life energy.

The establishment should have been trumpeting the benefits of this magnificent nutrient to the rooftops since 1980. Instead CoQ-10 was suppressed by a jealous establishment monopoly and it appears the “public health” powers are still conspiring against one of the most important and beneficial nutrients known.

For example, the “public health” scions work overtime to force fluoridation of community water on people, and few chemicals are harder on CoQ-10 production in the body than fluoride. Any negligible help for children’s teeth is far outweighed by the depletion of CoQ-10.

Because this molecule is synthesized in the liver, it was never **patentable** and is therefore “unprofitable” by the standards of the monopoly drug industry. Also, because CoQ-10 is made in the liver it is not considered a vitamin, but it has been listed for years as an **essential nutrient** in the *Physician’s Desk Reference*.

Because of the way CoQ-10 is stored and concentrated in the body, and due to the turnover rate in the living body, which is now well understood, supplementing the diet with this nutrient is mandatory for good health.

The adult human body pool has been found to be approximately 2 grams and requires replacement of about 500 mg a day based on its average turnover rate of about 4 days in various tis-

sues. CoQ-10 must be supplied either by synthesis in the liver (if the liver is healthy) or from dietary sources. Synthesis decreases progressively in humans above age 21. Furthermore, the average CoQ-10 content of our modern western diet is less than 5 mg per day. Thus, CoQ-10 supplementation appears to be the only way for older people, and certainly chronically ill people to obtain the major proportion of the minimal 500 mg per day need.

Studies have shown that failure to supplement by the chronically ill, or the aged, or those who are stressed, can have tragic consequences in the form of irreversible damage in the heart, brain, and other vital organs and systems throughout the body.

Fluoride is not the only common element that can help deplete a body of CoQ-10 it is well known that the heavily advertised statin drugs prescribed for lowering cholesterol deplete the body’s stores of CoQ-10. In fact it was Dr. Folkers, Director of Research for Merck for 20 years, who warned in 1989 that “heart disease is caused or worsened by the depression of CoQ-10 that is associated with statin use and that CoQ-10 must be supplemented adequately in patients given statin drugs.”

Statin drugs decrease Q10 even more than aging. The percentages of the decrease in CoQ-10 listed below are taken from *Kalen A, Appelkvist EL, et al. Age-related changes in the lipid compositions of rat and human tissues. Lipids. 1989 Jul;24(7):579-84. 21. And from Rosenfeldt FL, Pepe S, et al. Coenzyme Q10 improves the tolerance of the senescent myocardium to aerobic and ischemic stress: studies in rats and in human atrial tissue. Biofactors. 1999; 9(2-4):291-9.*

Heart muscle wall—72% decrease; pancreas—83% decrease; skin—75% decrease; kidney 45% decrease; liver 17% decrease; heart overall—58% decrease: adrenal gland—50% decrease.

In fact Merck actually patented the use of CoQ-10 in combination with statin drugs back in 1990, but they have not produced such a combination product. Three years ago a petition was filed with the FDA proposing that the public health watchdogs put a warning label on statin drugs because of the dangerous depletion of CoQ-10.

The petition was filed in May of 2002 but it has been meticulously ignored even though the supportive science is irrefutable. What a travesty—statins are advertised and sold as drugs to protect against heart disease while one of the main side effects is heart disease due to depletion of CoQ-10. ♥

FRIENDLY FLORA IS BACK!

180 capsules

| | | |
|---------------------|-------------|------------------|
| ONE BOTTLE | \$21 | Code: FF1 |
| FOUR BOTTLES | \$70 | Code: FF4 |

Carotec is bringing *Friendly Flora* back which only contains lactobacillus. We still have the popular Ultimate Digestive Formula, for those who want: 1.) Lactobacillus, 2.) Enzyme blend and 3.) Pre-biotic fiber.

For efficient digestion and maximum absorption of nutrients, the proper balance of microbes is essential, and the key to bacterial balance lies in the lactobacillus acidophilus family of bacteria, which are known for producing lactic acid and vitamin B metabolites while they colonize and work in the human digestive tract. In the annals of folklore it has long been known that the lactobacillus type bacteria are the most important microbes among the various forms of friendly bacteria inhabiting the intestine. Belief in the beneficial effects of these “lactic acid” producing fellows has existed in a number of human cultures for thousands of years. Virtually every civilization in recorded history has consumed one form or another of milk products cultured with lactobacilli. Yogurt and kefir are famous, for example.

The famous Elie Metchnikoff, whose research revolutionized biology before the turn of the century, established a “theory of longevity” in which he linked long and robust lives to the continuous ingestion of lactobacilli cultured foods. Metchnikoff said that ravages of aging were enhanced by “chronic putrefaction” caused by the wrong kinds of microflora in the intestines. Now you can correct that problem.

Ultimate Digestive Formula

90 capsules

| | | |
|---------------------|--------------|-------------------|
| ONE BOTTLE | \$36 | Code: UDF1 |
| FOUR BOTTLES | \$124 | Code: UDF4 |

Carotec's new Ultimate Digestive Formula contains a proprietary blend of pre-biotic fiber (Fiberaid®), Ganeden BC30 (providing 1.5 billion CFU of bacillus coagulans) and Amylase, Protease and Lipase enzyme blend. 90 capsules per bottle; regular dosage 1 per day, intensive dosage 3 per day. Non-member price is \$54 for one bottle.



Study Shows Vitamin B12 Fights Brain Shrinkage & Bone Loss

Vitamin B12

NEW Carotec product for 2009

The power of B12 in tablet form

60 sublingual tablets

5,000 micrograms Methylcobalamin

| | | |
|-------------------------|-------------|--------------------|
| Buy 1 get 1 free | \$36 | Code: B12K1 |
| Buy 3 get 3 free | \$90 | Code: B12K3 |

Methylcobalamin, an active co-enzyme form of vitamin B12, is essential for cell growth and replication. It is more concentrated than other forms of B12 in the cerebrospinal fluid where it can be used by the central nervous system. It donates methyl groups to the myelin sheath that insulates certain nerve fibers. It may also play a role in maintaining a healthy sleep-wake cycle, as well as normal nerve function as well as help keep homocysteine levels in check. Methylcobalamin also protects eye function against toxicity caused by excess glutamate. Vegetarians may lack minimum levels of B12.

B12 made national headlines in mid-October: “A growing number of experts is urging everyone over the age of 50 to increase their intake of the vitamin B12. A continuing study of 2,576 adults in Framingham, Mass., linked low blood levels of B12 to bone loss in men and women; a study of 703 women in their 70s living at home in Baltimore linked markers of B12 deficiency to frailty; a study published this year—of 107 people over 60 who were followed for five years, linked low levels of B12 to shrinkage of the brain.”

But these studies cannot prove cause and effect, experts say. Until placebo-controlled clinical trials are conducted, it is not known whether increasing levels of B12 helps. However, they say, it cannot hurt. ♥

Better Health in the 'Palm' of Your Hand?

Find out why ingredients in virgin palm oil are claimed to open clogged carotid arteries, ward off breast cancer and help your brain health too!



March Madness:
Carotec products
now on sale at
30% to 50%
off regular price!

Super Savings Inside

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