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## RESEARCH

### CoQ10: Dramatic Results Without Much Fanfare

#### THE GOAL: TO FIND PRACTICAL METHODS OF RETARDING THE AGING PROCESS

by Jeffrey Laign

Why isn't coenzyme Q10 one of the most remarkable new therapies for a wide variety of illnesses prescribed more often by doctors? It may be because it's not a patented drug . . . but that doesn't make it any less effective.

Take a look at the diseases scientists have treated with coenzyme Q10 and you'll understand why researcher Peter Lansjoen calls the organic substance "the most fundamental change in medicine since the discovery of the microbe."

Studies from around the world have contributed to the mounting evidence that CoQ10 may be effective in treating or preventing cancer, heart disease, muscular dystrophy, Parkinson's disease, chronic fatigue syndrome, periodontal disease and AIDS. CoQ10 can boost your energy levels and make you look and feel younger. In fact, it may even help you to live longer.

"It's not a panacea, but it is a substance that can do an awful lot of good for an awful lot of people," says researcher William V. Judy, a veteran CoQ10 researcher at the Southeastern Biomedical Institute in Bradenton, Fla.

If that's so, then why aren't more doctors prescribing it? "The problem with CoQ10," Judy says, "is that it's a natural substance and, as such, not subject to patent laws. Therefore, the big drug companies haven't been interested in studying it."

In other words, says pioneer researcher Karl Folkers, "The reason CoQ10 is not a household nutrient in the West has more to do with the lack of protected marketing positions than with its safety or how well it works."

#### WHAT IS COQ10?

Your body is composed of more than a trillion cells, each of which contains mitochondria. Think of mitochondria as energy-generating factories. Here nutrients obtained from the foods you eat are burned in the presence of the oxygen you breathe. In order to make energy, mitochondria must have CoQ10 molecules, which assist several enzymes in stimulating the process.

Nobody had ever heard of CoQ10 until 1956 when scientists at the University of Wisconsin isolated a crystalline compound from beef heart mitochondria. They sent the sample to Folkers, who then was head of a biochemical research team at Merck Sharp and Dohme Research Laboratories in Rahway, N.J. It was Folkers who determined the chemical structure of the substance, which is found in high concentrations in the heart, liver, kidney and pancreas.

Scientists subsequently noted that CoQ10 levels were well below normal in patients who suffered from a wide variety of ailments, including heart disease, cancer and muscular dystrophy. One study of more than 1,000 heart attack patients, for example, found that their blood and tissue levels of the substance were markedly lower than those of healthy people.

Nonetheless, it was years before anybody conducted a major study of CoQ10, because no one could obtain enough of it. Although CoQ10 is present in nearly all foods, as well as human and animal tissues, it was difficult and costly the extract.

Then in 1974 researchers at the Japanese company Nisshin found a way to produce CoQ10 from an ingredient found in tobacco. That discovery was followed in 1977 by development of fermentation methods to make the substance. The researchers called the coenzyme Ubidecarenone and began marketing it as a cardiovascular medicine. By 1982, Ubidecarenone had become one of the top-five-selling drugs in Japan, consumed daily by more than 6 million Japanese. The following year, the Life Extension



Foundation introduced CoQ10 to the U.S. public, promoting it as essential for health and longevity.

"Although I have no statistics to prove it, I'd say that today sales of CoQ10 are definitely on the increase," says Judy, a physiologist who has conducted three clinical trials of the substance with cardiac patients.

And it's no wonder that more people are taking CoQ10, considering the staggering range of ailments it may be effective in treating.

## **CANCER**

Folkers and other researchers initially began studying CoQ10 as a treatment for heart disease. Then, after they treated cardiac patients who also had cancer, they discovered that the substance might have significant use in combating tumors.

One patient, for example, took CoQ10 and went for nine years without suffering any symptoms of heart disease or cancer. Other patients remained symptom-free of both diseases for 10 and 15 years.

Another case involved a 44-year-old woman whose breast cancer has spread to her liver. Doctors began giving the woman a daily dose of CoQ10. Several months later her liver tumors disappeared, and the cancer had not spread anywhere else in her body.

But the most compelling cancer study to date was conducted at a private clinic in Denmark and reported in 1994. Thirty-two patients with breast cancer were given a mixture of antioxidants (including vitamins C, E, beta-carotene and selenium), fatty acids and 90 mg of CoQ10. After a month, six of the women showed signs of partial remission. Doctors increased the dosage to 390 mg. A month later, one woman's tumor had disappeared.

"I had never seen a spontaneous complete regression of a breast tumor with any conventional anti-tumor therapy," says Knud Lockwood, one of the principle researchers in the study.

But CoQ10 isn't limited to treating heart disease and cancer. As researchers are discovering, it may hold the key to treating a variety of other diseases as well.

## **MUSCULAR DYSTROPHY, PERIODONTAL DISEASE**

Double-blind studies have demonstrated CoQ10's effectiveness in treating muscular dystrophy. In one study, 12 patients ages 7-69 were treated for three months with 100 mg of CoQ10 and a placebo. The patients who took CoQ10 improved dramatically, while the placebo group continued to suffer progressive symptoms. As a result, researchers recommended, "Patients suffering from muscular dystrophies and the like should be treated with CoQ10 indefinitely."

Folkers also observed firsthand how CoQ10 can help people with muscular dystrophy. "An adult with late onset form of muscular dystrophy had been advised by his neurologist that he should mentally prepare himself for a wheelchair within two years," Folkers recalls. "He began a daily regimen of CoQ10. Six years later, he was out of a wheelchair and could swim, bowl and play golf."

Doctors have observed that people with periodontal disease have significantly low levels of CoQ10 in the tissues of their gums. Researchers at Osaka University Faculty of Dentistry in Japan gave eight patients with moderately or severely inflamed gums 60 mg of CoQ10 a day for eight weeks. The patients received no other therapy. The results, according to clinicians: "CoQ10 was effective in suppressing gingival inflammation."

In another study, 10 men were asked to apply a CoQ10 solution to their gums each day. They received no other medications. In the first three weeks of treatment, the men reported a significant reduction of symptoms. "These results suggest that topical application of CoQ10 improves adult periodontitis, not only as a sole treatment but also in combination with traditional nonsurgical periodontal therapy," researchers reported.

## **AIDS AND POST-OPERATIVE THERAPY**

People with acquired immunodeficiency syndrome also have far less CoQ10 in their blood than healthy people. To determine the effect of CoQ10 in fighting the disease, Folkers and associates gave seven AIDS patients 200 mg of CoQ10 a day for several months. All seven started feeling better soon after beginning treatment. "The overall results," Folkers says, "were very encouraging and, at times, even striking."

In another study, two patients with AIDS Related Complex took CoQ10 and survived from four to five years without exhibiting symptoms of the disease. "This constitutes a rationale for new double-blind clinical trials on treatment patients with AIDS,"

researchers said.

Post-surgical complications are a leading cause of death among hospital patients. That's because our bodies are vulnerable to any number of infections after suffering the immune system battering caused by a surgical procedure. But several studies indicate that people who take CoQ10 before they undergo operations recover much more quickly.

In an Italian study, for example, 40 patients about to undergo coronary artery bypass surgery were divided into two groups. Patients in the first group received 150 mg of CoQ10 a day for seven days before the operation; those in group two did not. Patients in group one recovered much faster than those in the second group, and suffered fewer complications.

"Our findings," the researchers said, "suggest that pre-treatment with coenzyme Q10 may play a protective role during routine bypass grafting by attenuating the degrees of per oxidative damage."

CoQ10 has three major functions: to help several mitochondrial enzymes convert dietary nutrients into energy; to quench free radicals generated in the energy-making process, and to help protect integrity of the mitochondrial membrane.

Because it is a powerful antioxidant - as powerful as vitamin E - CoQ10 may help you feel and look younger, and live longer. Several studies have found that CoQ10 prevents oxidative stress in skin, protects sperm from oxidation and keeps them mobile, and slows the aging process.

Aging rats given CoQ10, for instance, developed the heart level function of young, healthy rats, according to Australian researcher Anthony Linnane. In another study, weekly injections of CoQ10 extended the life span of mice by 56 percent. However, another study showed no extension of maximum lifespan with high doses of CoQ10.

Until recently, scientists assumed that as we get older, our bodies make smaller amounts of CoQ10, which leaves us feeling weak and tired. But researcher Judy thinks something else may be going on.

"It may not be that our CoQ10 production goes down with age," he says. "It may be that we're using up all our CoQ10 to fight free radicals as an antioxidant, so there's not enough available to give us energy."

### **HOW MUCH SHOULD YOU TAKE?**

Don't try to obtain adequate levels of CoQ10 from the foods you eat. "It takes about six to seven vitamins and trace minerals to make CoQ10 in the body," Judy says. "You'd have to eat about 16 pounds of beefsteak or two gallons of spinach a day to get your daily requirement."

Researchers say you should take at least 30 mg of CoQ10 a day if you are healthy. If you have a life-threatening illness, consider taking 100 mg a day. Some cancer patients have taken as much as 400 mg a day.

Also Judy says, "Because CoQ10 is a fat-soluble nutrient, it assimilates better in your body in the presence of fat." So unless your supplement comes in an oil-based gel cap, take CoQ10 with peanut butter or some other fat.

And if you are using the supplement to fight disease, don't stop taking it. Studies show that patients continued to improve as long as they took CoQ10. When they stopped, their illnesses returned in full force.

One of Folkers patients, a 52-year-old woman, began taking CoQ10 after she was diagnosed with lung cancer. Thirty months later, her cancer appeared to be in remission. But six days after she stopped taking the nutrient, she developed pulmonary edema and died.

### **WHAT'S AHEAD?**

Researchers say the evidence is overwhelming that CoQ10 is a vital nutrient necessary for health and well-being. English researcher Peter Mitchell, in fact, won a Nobel Prize in 1978 for his work in identifying CoQ10's attributes. Nonetheless, most people are unaware of the potential health benefits of taking CoQ10, says Saul Kent, Life Extension Foundation president.

"We at the Foundation consider it a monumental tragedy that hundreds of millions of people aren't taking daily doses of CoQ10," Kent says. "We believe strongly that the regular widespread use of this remarkable nutrient would save vast numbers of lives and would significantly improve the quality of life for the vast majority of people on the planet."

But funding for clinical studies - from drug companies, the federal government and other sources - has been slow to materialize.

"Probably what will happen," Judy speculates, "is that 20 years from now somebody will rediscover this nutrient and patent a chemical analog. Then the pharmaceutical companies will become interested."

In the meantime, Judy says, researchers must wait.

"And that's a real shame. There is so much more that we need to know about this substance."

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