

# The Nutrition Reporter™

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## Two Nutrients Make a Big Difference in Reducing Risk of Heart Diseases

Two nutrients – magnesium and vitamin-like coenzyme Q10 (CoQ10) – can make a huge difference in reducing the risk of two different types of heart disease.

Liana C. Del Gobbo, PhD, of the Harvard University School of Public Health, and her colleagues analyzed the relationship between magnesium and the general risk of cardiovascular disease and ischemic heart disease specifically. They focused on 16 studies that included a total of 313,041 people.

Del Gobbo found that high blood levels of magnesium were associated with a 30 percent lower risk of developing cardiovascular diseases. People with high magnesium levels also tended to have a lower risk of ischemic heart disease and death from ischemic heart disease.

Meanwhile, high dietary intake of magnesium was associated with a 22 percent lower risk of ischemic heart disease, which is characterized by a reduced blood supply to the heart.

The study's findings were the "most robust evidence to date" of the relationship between circulating and dietary magnesium and the risk of cardiovascular diseases.

Magnesium is involved in more than 300 biochemical reactions, including those involved in regulating heart rhythm. Still other research has found that the mineral is essential for bone formation and might also reduce asthma symptoms.

In the other study, Svend Aage Mortensen, MD, ScD, of National University Hospital, Copenhagen, Denmark, and his colleagues conducted a long-term controlled study that treated patients with moderate to severe heart failure, a disease characterized by the heart's weakened ability to pump blood.

In addition to receiving conventional medications for heart failure, 420 European and Asian patients took either 100 mg of CoQ10 or placebos three times daily for two years. All of the patients had been

previously classified as Class III or IV heart failure patients, which meant their disease was moderately severe to extremely severe.

Consistent with other studies of CoQ10 dating back to the 1970s, this study also found clear benefits to taking supplemental CoQ10. By the end of the study, "there was a significant improvement...in the CoQ10 group," wrote Mortensen. Only 14 percent of people taking CoQ10 experienced a serious cardiovascular event, compared with 25 percent of those taking placebos.

In addition, only 18 (9 percent) people taking CoQ10 died during the two-year study, compared with 36 (17 percent) in the placebo group.

"CoQ10 should be considered as a part of the maintenance therapy of patients with chronic heart failure," wrote Mortensen.

CoQ10 formed the basis of the 1978 Nobel Prize in Chemistry, and it plays an essential role in how cells make energy.

References: Del Gobbo LC, Imamura F, Wu JHY, et al. Circulating and dietary magnesium and risk of cardiovascular disease: a systematic review and meta-analysis of prospective studies. *American Journal of Clinical Nutrition*, 2013;doi 10.3945/ajcn.112.053132. Mortensen SA, Kumar A, Dolliner P, et al. The effect of coenzyme Q10 on morbidity and mortality in chronic heart failure. Results from the Q-SYMBIO study. *European Journal of Heart Failure*, 2013;15, S20: # 440. □

### Perspectives

#### Probiotics May Enhance Mood

Just a few years ago, we thought that our gut bacteria simply helped us digest food and synthesize trace amounts of a few vitamins. Then researchers discovered that these beneficial bacteria – whose population is 10 times that of all the cells in our entire body – help fine tune our immune systems and fight diarrhea, stomach flus, and vaginal infections.

It now turns out that our gut bacteria – and probiotic supplements – can do a lot more. A

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growing body of research shows that thin people have more of one bacteria family in their gut, while obese people have more of a different family of bacteria. It's difficult to determine which comes first – the type of bacterial population or one's eating habits. However, what we eat does influence the composition of our gut bacteria. If you eat a lot of fiber-rich vegetables, you'll have healthier gut bacteria. If you eat a lot of junk food, you'll have less healthy gut bacteria.

The latest research shows that eating yogurt with specific strains of probiotics, which help maintain healthy gut bacteria, can actually improve a person's mood. A new study by Kirsten Tillisch, MD, of the University of California, Los Angeles, found that women who ate yogurt with live bacteria did a far better job of coping with stress and anxiety when compared with women who ate yogurt without live bacterial cultures.

Some people have a strong gut response to stress or anxiety, ranging from “butterflies” to stomach aches. So if your stomach gets upset when you feel stressed or anxious, consider having some sugar-free yogurt with live bacterial cultures – or a probiotic capsule. – JC

## **Fish Oils Reduce Mental Stress that Negatively Affects the Heart**

Omega-3 fish oil supplements provide many benefits to the heart, such as reducing triglyceride levels, lowering blood pressure, improving heart rhythm, and slowing the growth rate of atherosclerotic plaques. A new study has found that fish oils can also reduce the effect of mental stress, another known risk factor in heart disease.

Jason R. Carter, PhD, of Michigan Technical University, Houghton, and his colleagues began the study by measuring the reactions of 67 people at rest and then when mentally stressed. The stress was induced by asking the subjects to rush through a series of arithmetic tests.

Then the subjects were randomly assigned to take either 9 grams of fish oils – a relatively high dose – or 9 grams of olive oil daily (as a placebo) daily for eight weeks.

When the subjects were then retested, neither group showed any changes while resting. But there were significant differences when they were faced with another battery of stressful arithmetic tests.

First, the people taking fish oils benefited from reduced reactivity in their heart rate, a change that did not occur in people taking placebos. Second, they also had less muscle nerve activity – in effect, less

jumpiness. And third, they had a lower level of “calf vascular conductance” – all signs of a reduction in stress.

The study also confirmed the body-mind connection – that stress not only affects the heart through “neurovascular” pathways, but that fish oils can blunt the negative effects of mental stress.

Reference: Carter JR, Schwartz CE, Yang H, et al. Fish and neurovascular reactivity to mental stress in humans. *American Journal of Physiology. Regulatory, Integrative and Comparative Physiology*, 2013;304:R523-30. □

## **DHA Supplements Reduce Aggressive, Impulsive Behavior**

A respectable body of research has found that diets low in omega-3 fats are strongly associated with impulsive and aggressive behavior. In a new study, researchers from Wales found that supplements of DHA (docosahexaenoic acid) reduce both aggressive and impulsive behavior.

David Benton, DSc, of the University of Swansea divided 173 young adult men into four groups. One group took 672 mg of DHA daily for three months. A second group took a combination of DHA and a multivitamin and multimineral supplement. Another took just a multivitamin and multimineral supplement, and the fourth group took placebos.

Using standardized tests, Benton found that DHA reduced both aggressive and impulsive behavior. Although the multivitamin and multimineral supplement did not affect aggressive or impulsive behavior, it did reduce feelings of stress.

Reference: Long SJ, Benton D. A double-blind trial of the effect of docosahexaenoic acid and vitamin and mineral supplementation on aggression, impulsivity, and stress. *Human Psychopharmacology*, 2013;28:238-247. □

## **Vitamin C Supplements Enhance Effect of Prozac in Children**

The use of antidepressant drugs in children is controversial – because the drugs have limited effectiveness and can cause serious side effects. But a new study has found that adding vitamin C greatly reduces symptoms of depression.

Shaheen E. Lakhan, MD, of the Global Neuroscience Initiative Foundation, Los Angeles, and his colleagues treated 24 pediatric patients, with an average age of 10 years, who had been diagnosed with major depression, the most serious type. All of the patients were given 10-20 mg of fluoxetine (Prozac) daily. Half of them also received 1,000 mg of vitamin C daily, while the others were given placebos.

“Patients treated for six months with fluoxetine

and vitamin C showed a significant decrease in depressive symptoms in comparison to the fluoxetine plus placebo group,” wrote Lakhan.

He added that “vitamin C may be an effective adjuvant agent” in the treatment of major depression.

Reference: Amr M, El-Mogy A, Shams T, et al. Efficacy of vitamin C as an adjunct to fluoxetine therapy in pediatric major depressive disorder: a randomized, double-blind, placebo-controlled pilot study. *Nutrition Journal*, 2013;12:31. □

## High Calcium Intake Linked to Longer Lives in Women

One can almost get whiplash from recent studies on calcium supplements: some studies claimed they reduced the risk of heart attacks, while others suggested that they increased the risk.

In the latest salvo, researchers from McGill University, Montreal, tracked the health of 9,033 people in nine cities across Canada for an average of 10 years.

David Goltzman, MD, and his colleagues found that women who consumed up to 1,000 mg of calcium daily had a 22 percent lower risk of dying from any cause. The women benefited from calcium regardless of its source. Supplements, dairy foods, and nondairy foods were all related to a lower risk of death.

The benefits of larger amounts of calcium were not clear. And calcium intake was not associated with a lower risk of death in men.

Reference: Langsetmo L, Berger C, Kreiger N, et al. Calcium and Vitamin D Intake and Mortality: Results from the Canadian Multicentre Osteoporosis Study (CaMos). *Journal of Clinical Endocrinology & Metabolism*, 2013: epub ahead of print. □

## In Japan, Certain Eating Habits May Reduce Dementia Risk

A particular set of eating habits appears to reduce the risk of dementia, at least among Japanese citizens.

Toshiharu Ninomiya, MD, PhD, of Kyushu University, and his colleagues studied 1,006 people who ranged from 60 to 79 years of age when the study began. They were followed up for an average of 15 years, during which time 271 people developed dementia, including Alzheimer’s disease and vascular dementia.

The most protective dietary pattern was characterized by a high intake of soybeans and soybean products, vegetables, algae, and milk and dairy products, along with a low intake of rice.

“These results could help to motivate changes in the dietary behavior of the general population in Japan and, thereby, lower risk of the development of

dementia,” wrote Ninomiya.

Reference: Ozawa M, Ninomiya T, Ohara T, et al. Dietary patterns and risk of dementia in an elderly Japanese population: the Hisayama study. *American Journal of Clinical Nutrition*, 2013;97:1076-1082. □

## Vitamin D Benefits Pregnant Women and Their Fetuses

An analysis of 31 studies has found that low levels of vitamin D lead to several serious complications of pregnancy. Conversely, women with healthy blood levels of the vitamin have a relatively low risk of those complications.

Doreen M. Rabi, MD, and her colleagues at the University of Calgary, Canada, determined that women with low levels of the vitamin were about 50 percent more likely to develop gestational diabetes and about 80 percent more likely to develop preeclampsia.

A mother’s low vitamin D levels during pregnancy was also associated with an 85 percent greater risk of infants who were small for their gestational age.

In addition, mothers-to-be had greater odds of developing bacterial vaginosis and delivering low birthweight infants.

Reference: Aghajafari F, Nagulesapillai T, Ronksley PE, et al. Association between maternal serum 25-hydroxyvitamin D level and pregnancy and neonatal outcomes: systematic review and meta-analysis of observational studies. *BMJ*, 2013;346: doi 10.1136/bmj.f1169. □

## Supplements Benefit Hospitalized Patients – and Also Reduce Costs

A comprehensive statistical analysis has found that patients who received oral nutritional supplements had shorter hospital stays and did better in other ways, compared with patients who did not receive supplements.

Tomas J. Philipson, PhD, of the University of Chicago and his colleagues analyzed 44 million adult hospitalizations at 460 medical centers from 2000 to 2010. The information was drawn from the Premier Perspectives Database.

“Malnutrition is a serious and underappreciated problem among hospitalized patients. Malnourished patients face heightened risk of poor outcomes, including increased length of stay, healthcare costs, complication rates, readmission rates, and mortality,” wrote Philipson and his colleagues.

Only 1.6 percent of hospitalized patients took oral nutritional supplements, either on their own or provided by the medical centers. The supplements included either macronutrients (e.g., protein, carbs, or

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## Quick Reviews of Recent Research

### • Flavonoid may have anti-cancer effect

Cancer cells are often described as “immortal” because they can live forever as long as they receive nutrients. However, in a series of cell experiments conducted at Ohio State University, an antioxidant flavonoid might encourage cancer cells to die. The researchers determined that apigenin influenced 160 cellular processes, some of which could promote the death of cancer cells. Apigenin is found in a wide variety of fruits and vegetables including parsley and celery.

Arango D. *Proceedings of the National Academy of Sciences of the USA*, 2013: epub ahead of print.

### • Review shows probiotics reduce diarrhea

Canadian researchers conducted a Cochrane Database review of 23 studies, which included 4,213 adults and children, on the effect of probiotic supplements on antibiotic-induced diarrhea. Antibiotics frequently cause diarrhea because they do not distinguish between good or disease-causing bacteria. The researchers concluded that probiotic supplements reduced the number of people suffering from antibiotic-related diarrhea by 64 percent.

Goldenberg JZ. *Cochrane Database of Systematic Reviews*, 2013: doi: 10.1002/14651858.CD006095.pub3

### • Fish consumption may reduce allergies

Coldwater fish is rich in anti-inflammatory omega-3 fats. Swedish researchers analyzed dietary data from 3,285 children up to 12 years old. The data were obtained from dietary questionnaires completed by the parents for their children at various ages. In addition, the children’s blood levels of immunoglobulin E, a marker of allergies, was measured when

the children were eight years old. Children who ate large amounts of fish had about a one-fourth lower risk of developing allergies.

Magnusson J. *American Journal of Clinical Nutrition*, 2013;97:1324-1330.

### • Vitamin C might fight tuberculosis

Researchers from the Albert Einstein School of Medicine, Bronx, N.Y., conducted cell experiments to test the effects of vitamin C against the bacterium that causes tuberculosis. They reported that, in the presence of iron, vitamin C led to the destruction of TB-causing bacteria. As a result, vitamin C could be used in conjunction with antibiotics to fight treatment-resistant TB.

Vilcheze C. *Nature Communications*, 2013: doi 10.1038/ncomms2898.

### • Diet influences risk of hot flashes

Australian researchers analyzed the relationship between dietary habits and the risk of menopausal night sweats and hot flashes, also known as vasomotor menopausal symptoms. Women who followed a Mediterranean-style diet or ate a lot of fruit tended to have fewer symptoms, whereas women who ate high-fat and high-sugar diets tended to have more symptoms.

Herber-Gast GCM. *American Journal of Clinical Nutrition*, 2013;97:1092-1099.

### • B vitamins may reduce eye disease risk

High intake of lutein and omega-3s are associated with a lower risk of age-related macular degeneration (AMD). Australian researchers blood levels of several B vitamins and the risk of AMD in a group of 1,390 people over a 10-year period. High levels of homocysteine and low levels of vitamin B12 and folic acid were associated with a greater risk of AMD.

Gopinath B. *American Journal of Clinical Nutrition*, 2013: doi 10.3945/ajcn.112.057091.

## Supplements Benefit Patients...

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fats) or micronutrients (e.g., vitamins and minerals), but the study provided no further details.

People taking supplements had hospital stays lasting an average of 2.3 days less than those who did not take supplements. This change resulted in an average \$4,754 savings for each hospitalization.

Patients taking supplements were also 6.7 percent less likely to be readmitted to the hospital within 30 days.

“By increasing oral nutrition supplement use, hospitals can improve hospitalization outcomes and decrease healthcare spending,” wrote the researchers.

Reference: Philipson TJ, Thornton Snider J, Lakdawalla DN, et al. Impact of oral nutritional supplementation on hospital outcomes. *American Journal of Managed Care*, 2013;19: 121-128. □

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