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New Studies Suggest that Vitamin D May Be the Life-Extension Nutrient

If you'd like to live to a ripe old age, you might make sure you're getting at least 1,000 IU of vitamin D daily. Three new studies have found that people with high blood levels of vitamin D are less likely to die from *any* cause, including heart disease and cancer.

Harald Dobnig, MD, of the Medical University of Graz, Austria, and colleagues measured vitamin D levels in 3,258 men and women, with an average age of 62 years, who had been scheduled for a coronary angiography, a heart diagnostic procedure. Over an average follow up of about seven and one-half years, just over one-fifth of the subjects died.

Dobnig calculated that people with the lowest blood levels of vitamin D were about two and one-half times more likely to die from some type of cardiovascular disease. Furthermore, people with the lowest vitamin D levels were twice as likely to die from any cause, compared with those who had the highest vitamin D levels.

Low vitamin D levels were also associated with higher C-reactive protein and interleukin-6 levels, both signs of inflammation.

In the second study, Michal L. Melamed, MD, of the Albert Einstein College of Medicine, New York City, and his colleagues studied vitamin D levels and the risk of death in 13,331 American adults. The people in the study represented a cross-section of Americans and were participating in the Third National Health and Nutrition Examination Survey.

Once again, people with the lowest vitamin D levels were more likely to die during an average of almost nine years of follow up. In this study, men and women with the lowest levels of vitamin D – less than 17.8 ng/mL of blood – were 26 percent more likely to die from any cause.

In the third study, Stefan Pilz, MD, of the University of Heidelberg, Germany, studied almost 3,300 patients, most of whom were in their sixties. He found that, after almost eight years, people with

the lowest blood levels of vitamin D had a one-third greater risk of dying from cancer.

A previous study, conducted by researchers at Harvard University, noted Pilz, reported that people with high blood levels of vitamin D were 17 percent less likely to develop cancer and 29 percent less likely to die from cancer. They also had a 45 percent reduction digestive tract cancers.

References: Dobnig H, Pilz S, Scharnagl H, et al. Independent association of low serum 25-hydroxyvitamin D and 1,25-dihydroxyvitamin D levels with all-cause and cardiovascular mortality. *Archives of Internal Medicine*, 2008;168:1340-1349. Melamed ML, Michos ED, Post W. 25-hydroxyvitamin D levels and the risk of mortality in the general population. *Archives of Internal Medicine*, 2008;168:1629-1637. Pilz S, Dobnig H, Winklhofer-Roob B, et al. Low serum levels of 25-hydroxyvitamin D predict fatal cancer in patients referred to coronary angiography. *Cancer Epidemiology, Biomarkers and Prevention*, 2008;17:1228-1233. □

Perspectives

The Consequences of Deficiency

Vitamin D is on the fast-track toward nutritional sainthood – that is, of being declared a miracle vitamin.

Indeed, the research shows that vitamin D is required for healthy bones and to maintain the skeletal muscles that hold our bones in place. It helps prevent type 1 and type 2 diabetes. Vitamin D fights infections and may also have anti-depressant benefits. Vitamin D seems necessary for a maintaining a healthy heart. And perhaps most dramatically, vitamin D protects against many different types of cancer, including those of breast, colon, and prostate. All of these benefits point to the fundamental importance of vitamin D in health.

But I'll argue for a moment that almost everyone is looking at the health benefits of vitamin D from the wrong perspective.

Studies have consistently shown that low levels of vitamin D (either marginal levels or outright

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deficiencies) are common among both sexes and all age groups, from infants through seniors. The consequences of inadequate vitamin D are nothing less than catastrophic, contributing to the risk of all the diseases that vitamin D supplements correct. As Evan Shute, M.D., once told me, vitamins prevent what they also cure.

The risk of a vitamin D deficiency can be reduced simply by taking a capsule containing 1,000 to 2,000 IU daily. The benefits might seem miraculous, but they are not a true miracle. They are the result of correcting a single vitamin deficiency.

The conventional medical and dietetic view is that vitamin deficiency diseases were common through the 1940s, but that they are rare today. But this conventional view is wrong – often dead wrong for the people affected by such deficiencies.

It's incredible that, in 2008, a lack of vitamin D is widespread, not just in the United States, but throughout Europe, Asia, and the rest of the world. And if we looked just a little harder, we would find deficiencies of other vitamins and minerals also to be common. Imagine much much better off people would be if somehow we managed to eliminate all vitamin deficiencies. –*JC*

Amino Acid Supplements Improve Muscle Mass in Seniors

Supplements containing a mix of amino acids – the building blocks of protein – can increase muscle mass and reduce prediabetic symptoms among seniors, according to a new study by Italian researchers.

“Skeletal muscle is the largest single amount of tissue in the body and contains more than 50 percent of the body’s proteins,” wrote lead author Sebastiano B. Solerte, MD, PhD, of the University of Pavia. As a result, he noted, amino acid supplements may help prevent or reverse sarcopenia, a loss of muscle mass and muscle strength that’s common among the elderly.

Solerte and his colleagues asked 41 men and women, ages 66 to 84 years to take 8 grams of an amino acid blend (in the form of a snack) or placebo snacks at 10 a.m. and 5 p.m. daily for the initial 4-month phase of the study. After four months, the amino acid supplements and placebos were switched. Finally, everyone was given the amino acid supplements for the final eight months of the study.

The amino acids led to significant increases in lean mass, or muscle, after six months – and more so after 16 months of supplementation. In addition, amino acid supplements led to significant reductions in blood sugar and insulin levels after just two months –

enhancing the subjects’ resistant to prediabetes and type 2 diabetes.

The supplements also reduced the subjects’ levels of tumor necrosis factor alpha, reflected lower levels of inflammation.

Solerte wrote that the amino acid supplements “normalized fat-free body mass” within 16 months.

The 8-gram amino acid supplement contained L-leucine, L-lysine, L-isoleucine, L-valine, L-threonine, L-cysteine, L-histidine, L-phenylalanine, L-methionine, L-thyrosine, and L-tryptophan.

Reference: Solerte SB, Gazzaruso C, Bonacasa R, et al. Nutritional supplements with oral amino acid mixtures increases whole-body lean mass and insulin sensitivity in elderly subjects with sarcopenia. *American Journal of Cardiology*, 2008; 101[suppl]69E-77E. □

DHA Supplements Helpful in Treating Symptoms of Eczema

Docosahexaenoic acid (DHA), one of the principal anti-inflammatory omega-3 fatty acids, can reduce symptoms of eczema, a common skin disease.

Margitta Worm, PhD, of the Charité University of Medicine, Berlin, Germany, and her colleagues treated 53 patients, ages 18 to 40 years, with either 5.4 grams of DHA or placebos daily for eight weeks. The patients were regularly examined by the same dermatologist, who scored their eczema symptoms on a standardized clinical scale.

Patients taking DHA had a 23 percent decline in eczema symptoms during the study. Meanwhile, people in the placebo group had only a negligible improvement in symptoms.

In addition, patients taking DHA supplements had a reduction in immunoglobulin E (IgE), an immune-system compound strongly associated with eczema.

Reference: Koch C, Dolle S, Metzger M, et al. Docosahexaenoic acid (DHA) supplementation in atopic eczema: a randomized, double-blind, controlled trial. *British Journal of Dermatology*, 2008;158:786-792. □

Herbal Extract Helpful in Easing Symptoms of Osteoarthritis

The herb *Boswellia serrata*, the source of frankincense, is often used for its anti-inflammatory benefits. A proprietary extract of *Boswellia* – known as 5-Loxin® – can significantly reduce symptoms of knee osteoarthritis, according to study by American and Indian researchers.

More than 21 million Americans suffer from osteoarthritis. Researchers have estimated that 80 percent of people age 65 or older have some signs of osteoarthritis, though only 60 percent will have symptoms.

Most natural and pharmaceutical anti-inflam-

matory compounds work by altering the activity of the Cox-1 or Cox-2 enzymes or pro-inflammatory substances formed through the action of these enzymes. The 5-Loxin product contains several boswellic acids that inhibit the activity of a different enzyme, 5-lipoxygenase (5-Lox).

In the study, Siba R. Raychaudhuri, MD, of the University of California School of Medicine, Davis, and colleagues treated 75 patients with 100 mg of 5-Loxin, 250 mg of 5-Loxin, or placebos daily for three months. Seventy patients completed the study, all of whom were monitored with several standard clinical tests to assess osteoarthritis symptoms.

Both doses of 5-Loxin led to significant reductions in pain and improvements in physical mobility and functioning. However, people taking the higher dose of 5-Loxin benefited more quickly and with even greater improvements.

“Interestingly, significant improvements in pain score and functional ability were recorded in the treatment group supplemented with 250 mg 5-Loxin as early as seven days after the start of the treatment,” wrote Raychaudhuri.

The *Boswellia* extract also lowered levels of the enzyme “matrix metalloproteinase-3” in the synovial fluid of subjects’ knees. This enzyme is involved in the breakdown of cartilage.

Reference: Sengupta K, Alluri KV, Satish AR, et al. A double blind, randomized, placebo controlled study of the efficacy and safety of 5-Loxin® for treatment of osteoarthritis of the knee. *Arthritis Research & Therapy*, 2008;10: doi 10.1186/ar2461. □

N-Acetylcysteine Eases Depression in Bipolar Disorder

Physicians often have difficulty treating depression in people with bipolar disorder, formerly called manic-depression. In addition, both depression and bipolar are often complicated by low levels of glutathione, a key antioxidant made by the body.

Ashley I. Bush, MD, PhD, of the Mental Health Research Institute of Victoria, Australia, and his colleagues decided to use a glutathione precursor and antioxidant, N-acetylcysteine (NAC), to treat patients with bipolar disorder.

“We hypothesized that add-on NAC treatment may also be of clinical benefit in both the treatment and prevention of depressive symptoms in bipolar disorder, which are characteristically difficult to treat...” wrote Bush.

Seventy-five patients were treated with either 1 gram of NAC or placebos twice daily for six months, in addition to their regular medications.

By the end of the study, patients benefited from a significant reduction in symptoms of depression, the

primary end point of the study. They also had clear improvements in most of the study’s secondary end points, including functioning and overall quality of life. There was also a trend toward reduced manic symptoms.

“N-acetylcysteine is relatively inexpensive, of established safety, and available over the counter,” noted Bush.

References: Berk M, Copolov DL, Dean O, et al. N-acetylcysteine for depressive symptoms in bipolar disorder – a double-blind randomized placebo-controlled trial. *Biological Psychiatry*, 2008; doi 10.1016/j.biopsych.2008.04.022. □

Modest Amounts of Resveratrol May Yield Anti-Aging Benefits

Resveratrol, increasingly considered a life-extension nutrient, may have benefits in relatively small amounts, according to a new animal study.

About 10 years ago, researchers discovered that resveratrol, an antioxidant derived from red wine, activated the Sirt1 gene, which regulates life span and the risk for some diseases. But laboratory experiments have generally used very large and expensive amounts of resveratrol to lengthen lifespan in small animals.

In a new study, Jamie Barger, PhD, of Life-Gen Technologies, Madison, Wisconsin, and colleagues from several U.S. universities, fed laboratory mice three different diets for 14 months.

Barger found that mice on a strict calorie-restricted diet had relatively few age-related changes to their genes, compared with animals fed a regular diet. However, mice eating a regular diet supplemented with resveratrol had a significant slowing of age-related genetic changes – faring about as well as mice on the calorie-restricted diet.

The most striking benefits in the resveratrol-fed mice was the health of their hearts and their relatively low blood sugar.

The daily dose of resveratrol was 4.9 mg per kilogram of weight – the equivalent of about 350 mg for a 150-pound person.

In a separate study, presented at the 90th annual meeting of the Endocrine Society, held in San Francisco, researchers reported that resveratrol might have some benefits in weight control.

Pamela Fischer-Posovsky, PhD, of the University of Ulm, Germany, found that resveratrol, through the action of the Sirt1 gene, prevented immature fat cells from growing into large mature fat cells.

Reference: Barger J, Kayo T, Vann JM, et al. A low dose of dietary resveratrol partially mimics calorie restriction and retards aging parameters in mice. *PLoS ONE*, 2008;3:e2264 doi 10.1371/journal.pone.0002264. □

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Quick Reviews of Recent Research

• Zinc lozenges ease common cold symptoms

Clinical trials of zinc lozenges in the treatment of the common cold have led to conflicting findings. In a new study, conducted at Wayne State University in the United States, researchers gave either zinc lozenges (13.3 mg zinc acetate) or placebos to 59 patients on the first day they experienced cold symptoms. Patients took a lozenge every two to three hours while awake. People taking zinc lozenges had shorter cold duration (average of four versus seven days), fewer days with cough (two versus five), and fewer days with nasal discharge (three versus four and one-half).

Prasad AS. *Journal of Infectious Diseases*, 2008;15:795-802.

• More support for Mediterranean diet

Italian researchers analyzed 12 international studies that included 1.5 million people. They found that people consuming a Mediterranean-style diet had a 9 percent lower risk of death, a 9 percent lower risk of death from cardiovascular diseases, a 6 percent reduction in cancer, and a 13 percent lower risk of Alzheimer's and Parkinson disease, compared with other eating habits.

Sofi F. *British Medical Journal*, 2008;337:doi10.1136/bmj.a1344.

• B-vitamin deficiency may impair cognition

Researchers at Tufts University in Boston fed laboratory mice a diet deficient in B vitamin for 10 weeks. The animals' levels of homocysteine – a risk factor for heart disease and stroke – increased seven times higher than in mice eating a regular diet. In addition, the mice had impaired spatial learning – difficulty finding their way through a maze, poorer memory, and deleterious changes in tiny blood vessels in the brain. The researchers noted that similar microvascular changes may be related to age-related cognitive decline in people.

Troen AM. *Proceedings of the National Academy of Sciences*, 2008;105:12474-12479.

• Antioxidants influence asthma symptoms

Australian researchers placed 32 asthmatic men and women on a low-antioxidant diet for 10 days, during which their symptoms deteriorated. They were then asked to drink tomato juice with 45 mg of lycopene, take tomato extract capsules containing 45 mg of lycopene, or take placebos for seven days before being switched to one of the other protocols. Airway inflammation was reduced with both the tomato juice and the tomato extract capsules. The researchers wrote that omitting antioxidant-rich foods can have a detrimental effect on asthma symptoms. They also noted that both the juice and

tomato extract capsules contained other potentially beneficial antioxidant nutrients besides lycopene.

Wood LG. *Free Radical Research*, 2008;42:94-102.

• Fish consumption reduces appetite

A team of researchers from Spain, Iceland, and other European nations asked 31 obese subjects to follow a low-calorie weight-loss diet for eight weeks. The researchers found that diets that included fatty fish (salmon) three times weekly were far more effective in reducing post-meal appetite, compared with lean fish (cod) and no fish diets. Immediately after eating salmon, the subjects reported feeling fuller, and two hours later they still felt full and had less hunger compared with people eating cod.

Parra D. *Appetite*, 2008;51:676-680.

• Low potassium may complicate arthritis

Researchers from Tehran, Iran, identified 36 middle-age women with rheumatoid arthritis and low blood levels of potassium. In addition to their regular medications, the subjects received either 6,000 mg of potassium chloride dissolved in grape juice or placebo drinks for 28 days. Forty-four percent of women receiving supplemental potassium had a significant decrease in arthritic pain, and 31 percent had a moderate reduction in pain.

Editor's note: To avoid heart rhythm abnormalities, do not take high doses of potassium supplements unless directed by a physician.

Rastmanesh R. *Journal of Pain*, 2008;9:722-731.

• Olive oil improves glucose tolerance

Danish researchers tested the effects of dietary olive oil in 46 obese men and premenopausal women. After six months, people including olive oil in their diets benefited from 3 percent lower fasting blood sugar and 9.4 percent lower fasting insulin. A low-fat diet worsened glucose tolerance.

Due A. *American Journal of Clinical Nutrition*, 2008; 87:855-862.

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