

# The Nutrition Reporter™

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## New Studies Describe Natural and Effective Treatments for Helping Knee Osteoarthritis

Supplements containing a combination of glucosamine and methylsulfonylmethane (MSM) can significantly reduce pain in men and women with osteoarthritis. So can a topical cream containing "cetylated" fats, according to recent medical journal reports.

In the first study, P.R. Usha, MD, and M.U.R. Naidu, MD, of Nimzan's Institute of Medical Sciences, India, gave 188 patients with knee osteoarthritis one of four daily supplements for 12 weeks. The supplements included 1,500 mg of glucosamine, 1,500 mg of MSM, a combination of both supplements, or placebos.

Both glucosamine and MSM reduced knee pain in the subjects, but the combination helped more than either individual supplement.

After 12 weeks, glucosamine reduced pain by almost two-thirds, and MSM eased pain by about half, according to tests. The two supplements together reduced pain levels to almost one-fifth of what they had been at the start of the study.

Glucosamine is a compound used in the manufacture of cartilage. MSM, an organic sulfur compound, is part of several key antioxidants, including glutathione and N-acetylcysteine, which have anti-inflammatory properties.

In the second study, William J. Kraemer, PhD, of the University of Connecticut, Storrs, and his colleagues used two types of topical creams in the treatment of 40 patients with knee osteoarthritis. One cream, sold commercially as Celadrin, used a blend of six cetylated fatty acids and the other was a placebo cream. The fatty acids, which are related to olive oil and other essential dietary fats, included cetyl myristoleate, cetyl myristate, cetyl palmioleate, cetyl laureate, cetyl palmitate, and cetyl oleate.

Patients applied the creams twice daily, and their pain-free mobility was assessed at the beginning of the study, 30 minutes after the initial treatment, and after 30 days of treatment.

Kraemer and his colleagues reported that the

cetylated fatty acid cream led to a "significant increase" in the subjects' physical activities, including balance, climbing stairs, walking, and rising from a chair more quickly. The benefits were noted 30 minutes after the initial topical application to the knees and especially after 30 days of regular use.

References: Usha PR, Naidu MUR. Randomised, double-blind parallel, placebo-controlled study of oral glucosamine, methylsulfonylmethane, and their combination in osteoarthritis. *Clinical Drug Investigations*, 2004;24:353-363. Kraemer WJ, Ratamess NA, Anderson JM, et al. Effect of a cetylated fatty acid topical cream on functional mobility and quality of life of patients with osteoarthritis. *Journal of Rheumatology*, 2004;31:767-774. □

### Perspectives...

#### The Vitamin E Controversy Continues

Canadian physicians first used vitamin E to treat heart disease in the 1940s and were met with blistering criticism except for a small number of devoted "health food nuts." In 1996, the American Heart Association declared vitamin E to be one of the top 10 heart developments of that year. All that changed in August when the AHA recommended against the use of antioxidant supplements in the prevention of heart disease.

According to a statement by the AHA's nutrition committee, the evidence was too weak and conflicting to give a thumbs up to antioxidants, even though it acknowledged that some research did support the use of vitamin E in preventing heart disease. One of the negative studies cited found that vitamin E reduced the effectiveness of cholesterol-lowering statin drugs.

But as you might imagine, there is more to the story. Despite their occasional positive report on one supplement or another, the AHA journals strongly emphasize pharmaceutical drugs and surgery to prevent and treat heart disease. That should come as

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no surprise, since drugs and surgical procedures are a far bigger medical business compared with prevention through nutrition and exercise. You need only turn on the evening news or read any general-interest magazine to see a litany of ads for statin drugs, or to hear that the federal government would like 36 million Americans to take these drugs.

Nearly absent in all this is an open discussion of the well-established dangers of statin drugs. For example, they choke off the body's production of vitamin-like coenzyme Q10, which can lead to liver disease, heart failure, and cancer.

Just as the AHA was giving their thumbs down to antioxidants, a leading heart journal published a disturbing article on yet another consequence of statins. Belgian researchers reported that Lipitor, one of the most popular statin drugs, reduced the antioxidant effectiveness of vitamin E by almost one-fifth, unless patients also took vitamin E supplements.

There's a lot more to how vitamins reduce the risk of disease – and to how drugs reduce the effectiveness of vitamins. Nearly every drug affects vitamin metabolism for the worse.

Reference: Manuel-y-Keenoy, Vincks M, Vertommen, et al. Impact of vitamin E supplementation on lipoprotein peroxidation and composition in type 1 diabetic patients treated with atorvastatin. *Atherosclerosis*, 2004;175:369-376. □

## Diets Rich in Vitamin B3 Reduce the Risk of Mental Decline, Alzheimer's Disease

Moderately high dietary intake of vitamin B3, known as niacin or niacinamide, slows the age-related decline in mental function and significantly reduces the risk of Alzheimer's disease.

Martha Clare Morris, ScD, of the Rush Institute for Healthy Aging, Chicago, and her colleagues tracked the health of 3,718 men and women age 65 years and older from 1993 through 2002. Of these people, Morris focused on the dietary habits of 131 people who developed Alzheimer's disease and 815 who did not.

When the study began, none of the subjects had Alzheimer's disease. By the time they were reevaluated after about four years, people who ate moderately large amounts of vitamin B3 from foods were 70 percent less likely to develop Alzheimer's. Men and women who consumed the most vitamin B3, just over 22 mg daily, were 80 percent less likely to develop Alzheimer's. Conversely, people who consumed the least vitamin B3, less than 12 mg daily, had the greatest risk of Alzheimer's.

High intake of vitamin B3 also reduced the risk of non-Alzheimer's cognitive decline. High vitamin B3 intake was associated with a 44 percent lower risk of

cognitive decline.

In addition, high dietary intake of the amino acid tryptophan, which the body uses to make its own vitamin B3, was also associated with a low risk of developing Alzheimer's disease.

"Niacin [B3] rich foods include meats, legumes, nuts, enriched grains/cereals, coffee, and tea," Morris and her colleagues wrote.

A severe deficiency of vitamin B3 is known to produce confusion and psychosis, and marginal deficiencies might affect brain function more slowly.

Reference: Morris MC, Evans DA, Bienias JL, et al. Dietary niacin and the risk of incident Alzheimer's disease and of cognitive decline. *Journal of Neurology, Neurosurgery, and Psychiatry*, 2004;75:1093-1099. □

## Higher Dietary Intakes of Antioxidants Reduce Chemotherapy Side Effects

Children undergoing chemotherapy for leukemia have fewer side effects if they consume larger amounts of antioxidants. That's the finding of a study conducted at Columbia University, New York City, and other institutions.

For six months, Deborah D. Kennedy, MD, director of Columbia University's division of pediatric oncology, tracked the health of 103 children with acute lymphoblastic leukemia. The children ranged from one to 18 years of age.

Overall, the children consumed only 66 percent of the recommended dietary allowance for vitamin E, 30 percent for total carotenoids, 59 percent for beta-carotene, and 29 percent for vitamin A.

"Lower intakes of antioxidants are associated with increases in the adverse side effects of chemotherapy," Kennedy wrote in the *American Journal of Clinical Nutrition*.

A maximum of four children took antioxidant supplements during the course of the study. Kennedy noted that "antioxidant use is not part of the conventional treatment of children with cancer..."

Children with higher intakes of vitamin E had a lower incidence of infection, and those with higher intakes of beta-carotene were less likely to experience toxic reactions to chemotherapy. Greater intake of vitamin C was associated with less toxicity, fewer delays in chemotherapy, and fewer days in the hospital.

"Low intake of vitamin C were the most predictive of all the nutrient intakes studied with respect to the occurrence of side effects," Kennedy wrote.

Reference: Kennedy DD, Tucker KL, Ladas ED, et al. Low antioxidant vitamin intakes are associated with increases in adverse effects of chemotherapy in children with acute lymphoblastic leukemia. *American Journal of Clinical Nutrition*, 2004;79:1029-1036. □

## Vitamin E Reduces Mucositis, Side Effect from Radiation Therapy in Cancer

Nearly all patients who undergo radiation therapy for head and neck cancers suffer from mucositis, a painful inflammatory side effect. Often, radiation therapy must be interrupted while patients recover from mucositis.

But Brazilian physicians have shown that a particular protocol with vitamin E supplements can significantly reduce the risk of mucositis.

Paulo R. Ferreira, MD, PhD, of the Pontificia Universidade Catolica do Rio Grande do Sul, Brazil, and his colleagues treated 54 patients diagnosed with head or neck cancers. For seven weeks, the patients underwent daily radiation therapy (except on week-ends). Before each therapy session, half of the patients let a 400 mg vitamin E capsule dissolve in their saliva. They swished the vitamin E and saliva in their mouth for five minutes, then swallowed. That night, at home, they repeated the process with a second capsule. Meanwhile, the other half of the patients followed the same steps, but with placebos.

By the end of the study Ferreira found that patients taking vitamin E supplements had a 36 percent lower risk of developing radiation-induced mucositis.

Reference: Ferreira PR, Fleck JF, Diehl A, et al. Protective effect of alpha-tocopherol in head and neck cancer radiation-induced mucositis: a double-blind randomized trial. *Head & Neck*, 2004;26:313-321. □

## Supplemental Alpha-Lipoic Acid Plays Role in Appetite and Weight Control

Alpha-lipoic acid, an antioxidant found in broccoli and beef, plays a key role in breaking down glucose and fat for energy. Although there has been scant supportive evidence, some people have recommended supplemental alpha-lipoic acid to improve the burning of glucose and fat as a means of losing weight.

Now, in an animal study described in a respected medical journal, Korean researchers have reported that alpha-lipoic acid may have an important role in regulating hunger – and therefore in appetite and weight.

Ki-Up Lee, MD, of the University of Ulsan College of Medicine, and colleagues conducted two experiments in which they focused on how alpha-lipoic acid affects AMP-activated protein kinase (AMPK), a hypothalamic enzyme that regulates fat and glucose metabolism.

According to Lee, when cellular levels of glucose or fat decrease, AMPK activity increases, leading to a sense of hunger.

In one experiment with conventional lab rats, Lee found that supplemental alpha-lipoic acid decreased AMPK activity, which led to less food intake and lower body weight. In a second experiment, with genetically obese rats, alpha-lipoic acid led to reductions in body weight, visceral fat, glucose, and insulin.

“Because most obese people are resistant to leptin [a hormone involved in weight regulation], this agent is ineffective in treating human obesity,” Lee wrote. “Thus, alpha-lipoic acid may be a promising anti-obesity drug for treatment of leptin-resistance human obesity.”

Reference: Kim MS, Park JY, Namkoong C, et al. Anti-obesity effects of alpha-lipoic acid mediated by suppression of hypothalamic AMP-activated protein kinase. *Nature Medicine*, 2004;10:727-733. □

## Multivitamin Supplements Reduce Deaths in Pregnant HIV Patients

A moderately high-potency multivitamin supplement can significantly slow the progression of HIV infection to full-blown AIDS, according to a study in the *New England Journal of Medicine*.

Although they are not a “cure,” supplements are an “effective, low-cost” way of reducing symptoms and the risk of AIDS-related death, according to lead researcher Wafaie W. Fawzi, MB, DrPH, of the Harvard University School of Public Health, Boston.

The study tracked the health of 1,078 pregnant Tanzanian women infected with HIV. The women received a multivitamin with vitamin A, a multivitamin without vitamin A, vitamin A alone, or placebos.

After eight years, women taking multivitamins were 29 percent less likely to have died from AIDS. Those taking multivitamins with vitamin A fared almost as well, whereas women in the vitamin A and placebo groups had the lowest rate of survival.

“Multivitamins also resulted in significantly higher CD4+ and CD8+ cell counts and significantly lower viral loads,” Fawzi wrote.

Multivitamin supplements also reduced the chances of complications, including oral ulcers, oral thrush, difficulty in swallowing, nausea, vomiting, and diarrhea.

The multivitamin contained 20 mg of vitamin B1, 20 mg B2, 25 mg B6, 100 mg B3, 50 mcg B12, 800 mcg folic acid, 500 mg vitamin C, and 30 mg of vitamin E. Vitamin A supplements provided 5,000 IU of vitamin A and 30 mg of beta-carotene.

Reference: Fawzi WW, Msamanga GI, Spiegelman D, et al. A randomized trial of multivitamin supplements and HIV disease progression and mortality. *New England Journal of Medicine*, 2004; 351:23-32. □

## Quick Reviews of Recent Research

### • Trans fats boost heart attack risk

Australian researchers have reported that people consuming large amounts of trans fatty acids (found in hydrogenated vegetable oils) had twice the risk of suffering a heart attack, compared with people who consumed little or no trans fats. They noted that trans fats were stored in the body's fat cells, but they rapidly disappeared from fat cells when dietary sources were avoided.

Clifton PM, et al. *Journal of Nutrition*, 2004;134:874-879.

### • Carotenoid-rich diet may reduce stroke risk

In a 13-year study, researchers compared blood levels of carotenoids among 297 male physicians who had experienced an ischemic stroke and the same number of stroke-free men. Men with the highest intake of carotenoids had about a 40 percent lower risk of stroke. Alpha-carotene reduced stroke risk by 41 percent, beta-carotene by 38 percent, and lycopene by 39 percent. However, these carotenoids may have been markers for a diet rich in fruits and vegetables.

Hak AE, et al. *Stroke*, 2004;35:1584-1588.

### • Vitamin D deficiency common in adolescents

In a study of 307 Boston-area adolescents, ages 11 to 18, researchers found that almost one-third had low levels of vitamin D. Twenty-four percent were considered deficient, and 4.6 percent were considered severely vitamin D deficient.

Gordon CM, et al. *Archives of Pediatric and Adolescent Medicine*, 2004;158:531-537.

### • Lipitor decreases coenzyme Q10 levels

Statin drugs inhibit an enzyme involved in the body's synthesis of cholesterol, as well as coenzyme Q10. A decrease in CoQ10 levels may raise the risk of heart failure or cancer. Researchers asked 34 men and women with elevated cholesterol to take 80 mg of Lipitor daily for 30 days. After two weeks, they noted a significant decrease in CoQ10 levels. By the end of the study, blood levels of CoQ10 had declined by half.

Rundek T, et al. *Archives of Neurology*, 2004;61:889-892.

### • Supplement improves fertility in women

One of every six couples in the United States has difficulty conceiving a child, with the cause being divided equally between men and women. Researchers asked 30 women, ages 24 to 46 years old, to take a proprietary supplement formulated to enhance fertility or to take placebos for three months. Women taking the supplement had hormonal changes suggestive of greater fertility. After five months, five women in the supplement group had become pregnant, but there were no pregnancies in the placebo

group. The supplement contained vitamins E, B6, B12, folic acid, iron, magnesium, zinc, selenium and the herbal extracts of chasteberry and green tea.

Westphal LM, et al. *Journal of Reproductive Medicine*, 2004;49:289-293.

### • Prickly pear extract reduces hangover symptoms

In a clinical setting, researchers provided sufficient alcohol (1.75 grams of alcohol per kilogram of body weight in four hours) to cause hangovers in 55 healthy, young men and women. Some of the subjects received an extract of prickly pear and others received placebos five hours before becoming intoxicated. The extract reduced the risk of a severe hangover by about half, mainly by reducing inflammation and C-reactive protein levels.

Wiese J, et al. *Archives of Internal Medicine*, 2004;164:1334-1340.

### • Low-carb diet reduces narcolepsy

Narcolepsy is characterized by excessive daytime sleepiness and, at times, a near-hypnotic state. Researchers placed 9 patients with narcolepsy on a low-carbohydrate diet for eight weeks. During this time, patients experienced modest improvements in daytime sleepiness.

Husain AM, et al. *Neurology*, 2004;62:2300-2302.

### • Supplements improve male fertility

Researchers gave 56 infertile men supplements of 2 grams of L-carnitine and 1 grams of acetyl-L-carnitine or placebos daily for six months. The subjects were tracked for an additional two months. The most significant improvement occurred in sperm motility (movement), especially in men who had the lowest levels of sperm motility at the beginning of the study. In addition, the researchers reported that four spontaneous pregnancies occurred in the partners of men taking L-carnitine and acetyl-L-carnitine.

Lenzi A, et al. *Fertility and Sterility*, 2004;81:1578-1584.

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