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IN THE NEWS

Vitamin K1 Retards Bone Loss



Vitamin K1 may help delay bone loss in postmenopausal women, especially if given in conjunction with certain minerals and vitamin D, new research shows.

For their study, researchers recruited 155 healthy postmeno-pausal women between 50 and 60 years of age and divided them into three groups. The first group received a daily supplement containing calcium, magnesium, zinc, and vitamin D. The second group received the same nutrients as the first group plus vitamin K1 supplements. The third group received an inactive placebo supplement.

After three years of treatment, the placebo group had lost approximately 5% of total bone mass, compared to 3.3% for the group receiving the vitamin supplement plus vitamin K1. The group receiving the vitamin supplement alone demonstrated a 4.6% decrease in total bone mass. No significant differences were observed among the three groups for bone mineral density measured in the lumbar spine (lower back).

“Recently, amazing new functions of vitamin K have been discovered, notably in the fields of bone and vascular health,” researcher Dr. Cees Vermeer of the department of biochemistry at the University of Maastricht in the Netherlands told Life Extension. “There are several forms of vitamin K, and in the present paper we have investigated its most common form, vitamin K1. It was found that—in combination with minerals and vitamin D—increased intake of vitamin K1 had an independent beneficial effect on bone. As compared to minerals plus vitamin D alone, the intake of extra vitamin K (1 mg/day) retarded postmenopausal bone loss by 35-40% during the entire three-year study period.”

*Editor's note: Most Life Extension members take 10 mg of supplemental vitamin K, which is ten times more vitamin K than was used in this study. Most Life Extension members also take hormone supplements such as DHEA and progesterone to help maintain healthy bone density.

—Marc Ellman, MD

Reference

Braam LA, Knäpen MH, Geusens P, et al. Vitamin K1 supplementation retards bone loss in postmenopausal women between 50 and 60 years of age. *Calcif Tissue Int.* 2003 Jul;73(1):21-6.

Nutrients Reduce Cold and Flu Symptoms in Elderly

A nutritional supplement containing vitamins, minerals, and structured lipids boosted immunity and reduced days of cold and flu symptoms in elderly participants in a study published in the *Journal of the American Geriatrics Society*.

To determine whether a nutritional supplement could modulate immune status, researchers recruited 66 individuals over the age of 65. Approximately half of the participants received eight ounces per day of an experimental formula containing protein, antioxidants (vitamins C and E, beta-carotene), selenium, zinc, fructo-oligosaccharides, and structured lipids. The other study participants received a control drink containing protein and minimal vitamins and minerals. Influenza (flu) vaccinations were administered to all participants approximately two weeks into the study.

Eighteen participants in the control group and 16 in the experimental group completed the 183-day study. The control group logged 156 days of upper respiratory tract infection symptoms, compared to only 78 days in the experimental group. In addition, blood tests taken on day 57 demonstrated that 87% of those given the supplement achieved a fourfold or greater increase in antibody response to a certain component of the flu vaccine, compared to only 41% in the control group. Lymphocyte proliferation to the flu vaccine also was greater in the supplement group than in the control group.

“Advanced age is associated with increased risk of nutrient deficiency and altered regulation of the immune system. This

combination is associated with increased risk of infection,” lead researcher Bobbi Langkamp-Henken, PhD, RD, of the University of Florida told Life Extension. “Many seniors do not get all of the nutrients that they require. By supplementing their diet with multivitamins and minerals, seniors may minimize their risk of nutrient deficiency and therefore get an immune advantage.”

—Marc Ellman, MD

Reference

Langkamp-Henken B, Bender BS, Gardner EM, et al. Nutritional formula enhanced immune function and reduced days of symptoms of upper respiratory tract infection in seniors. *J Am Geriatr. Soc.* 2004 Jan;52(1):3-12.

High Cysteine Linked to Lower Breast Cancer Risk



Higher blood levels of the amino acid cysteine seem to predict a reduced risk of developing breast cancer, suggesting that cysteine may have a protective benefit against breast cancer, according to research of more than 30,000 women as part of the Nurses’ Health Study.

Researchers found that women with the highest blood levels of cysteine had less than half the risk of developing breast cancer during the approximately six-year study period when compared to women with the lowest cysteine levels. Cysteine exerts its beneficial effects by merging with the amino acids glutamate and glycine to form glutathione, the most potent intracellular antioxidant and carcinogen-detoxifying agent.

In an interview with Life Extension, Dr. Shumin Zhang of Boston’s Brigham and Women’s Hospital and the Harvard School of Public Health, said, “In this large prospective study, women with the highest levels of blood cysteine, a key amino acid in the biosynthesis of glutathione (an antioxidant), had a 56% lower risk of developing breast cancer compared to those with the lowest

levels.”

“Cysteine or its precursors might have the potential to be chemoprotective against breast cancer,” Dr. Zhang and colleagues wrote in the medical journal *Cancer Epidemiology, Bio-markers & Prevention*. Dr. Zhang warned, however that “this exciting new finding needs to be confirmed by other large studies.”

—Marc Ellman, MD

Reference

Zhang SM, Willett WC, Selhub J, Manson JE, Colditz GA, Hankinson SE. A prospective study of plasma total cysteine and risk of breast cancer. *Cancer Epidemiol Biomarkers Prev.* 2003 Nov;12(11 Pt 1):1188-93.

Blood Pressure Drug Found to Raise Homocysteine

The commonly prescribed blood pressure medication hydrochlorothiazide may raise blood homocysteine levels, possibly counteracting the cardiovascular benefits of decreased blood pressure, according to a study published in the medical journal *Metabolism*.

For their study, researchers at the Institute of Clinical Chemistry in Magdeburg, Germany, randomly assigned 21 patients to receive 25 mg of hydrochlorothiazide daily and compared them to 19 patients who were given 50 mg of captopril daily. Hydrochlorothiazide is a diuretic-type blood pressure medication while captopril is in the angiotensin converting enzyme (ACE) inhibitor class.

At the end of the one-month study, both groups demonstrated a decrease in blood pressure. The researchers found, however, that blood homocysteine levels increased by 16% in patients taking hydrochlorothiazide, while remaining relatively unchanged in patients taking captopril. They hypothesize that a reduction in kidney function caused by hydrochlorothiazide may explain this finding.

In their article, the researchers cite two previous studies that report an association between diuretic medications and increased homocysteine levels, and express concern that the cardiovascular protection conferred by lowering blood pressure may be offset

by the increase in homocysteine: “Although this study is preliminary, it may be advisable to monitor homocysteine in patients treated with hydrochlorothiazide. If homocysteine increases substantially and hydro-chlorothiazide therapy has to be continued, normalization can be tried by supplementing vitamins, which lower homocysteine (folic acid, vitamins B6 and B12).”

—Marc Ellman, MD

Reference

Westphal S, Rading A, Luley C, Dierkes J. Antihypertensive treatment and homocysteine concentrations. *Metabolism*. 2003 Mar;52(3):261-3.

Lycopene Beneficial After Prostate Cancer Surgery

Lycopene, a carotenoid that has shown promise in helping to prevent and treat certain cancers, has been shown to be beneficial in patients who have undergone castration for severe prostate cancer.

Because prostate cancer is at least partially driven by male hormones, surgeons will occasionally remove the patient's testicles (orchidectomy) in an effort to reduce disease severity in advanced cases. To study lycopene's effect on metastatic prostate cancer, researchers in India randomly assigned 27 patients who were undergoing orchidectomy for metastatic prostate cancer to immediately start receiving lycopene supplements (2 mg twice daily) on the day of surgery. These patients were compared to a control group of 27 other patients undergoing orchidectomy who did not receive the lycopene supplements.

After six months of treatment, the researchers found a significant reduction in prostate-specific antigen (PSA) levels in both groups, but more so in the lycopene-supplemented group. This finding was persistent even one and a half years later. Moreover, 21 patients in the lycopene group demonstrated a “complete” PSA response (a PSA level of less than 4 ng/ml), compared to only 11 in the control group. By the end of the trial, 12 patients in the control group died, compared to only seven in the orchidectomy-plus-lycopene group.

Lycopene also seemed to decrease disease symptoms. Urinary peak flow rate improved significantly more in the group taking lycopene supplements as compared to the control group. The lycopene-supplemented group also reported subjective improvement in other voiding symptoms, such as frequency, urgency, and pain with urination.

In their article published in the *British Journal of Urology International*, the researchers noted: “The remarkable association between a diet rich in fruits and vegetables and the reduced risk of several malignancies has led to a consideration of the role of carotenoids in cancer prevention. Lycopene is one of the carotenoids that has emerged as important in the chemoprevention and treatment of various kinds of cancers, because of its unique properties of cancer prevention and regression, besides being a potent quencher of free radicals and an immunomodulator.”

—Marc Ellman, MD

Reference

Ansari MS, Gupta NP. A comparison of lycopene and orchidectomy vs orchidectomy alone in the management of advanced prostate cancer. *BJU Int*. 2003 Sep;92(4):375-8.

IN THE NEWS

Exercise May Help Prevent Breast Cancer



Regular exercise, even when begun later in life, can reduce a woman's chance of developing breast cancer by approximately 20%, according to a study published in the *Journal of the American Medical Association*.

Researchers followed nearly 75,000 women aged 50 to 79 as part of the Women's Health Initiative Cohort Study. The women were questioned about their current and past levels of physical activity, and this information was compared to their reported development of breast cancer. The study found that women who engaged in the equivalent of 1.25 to 2.5 hours per week of brisk walking had an 18% lower risk of breast cancer compared with inactive women during the nearly five-year study period. Women who engaged in 10 or more hours per week of brisk walking had a slightly greater reduction in risk. This reduction in breast cancer risk was evident even in women considered to be at higher risk for the disease, such as those with a strong family history of the disease and those who take hormone replacement therapy.

Lead researcher Anne McTiernan, MD, PhD, of the Fred Hutchinson Cancer Research Center in Seattle, WA, noted: "The good news is that even though hormone replacement therapy increases the risk of breast cancer, exercise is something women can do to lower this risk if they choose to continue taking hormone replacement therapy to manage the symptoms of menopause or to prevent osteoporosis."

—Marc Ellman, MD

Reference

McTiernan A, Kooperberg C, White E, et al. Women's Health Initiative Cohort Study. Recreational physical activity and the risk of breast cancer in postmenopausal women: the Women's Health Initiative Cohort Study. *JAMA*. 2003 Sep 10;290(10):1331-6.

Selenium Concentration Tied to Esophageal, Stomach Cancer Risk

Higher serum concentrations of the mineral selenium are related to a lower incidence of esophageal squamous cell carcinoma and gastric cardia (upper stomach) cancer, according to the results of a study recently published in the *American Journal of Clinical Nutrition*.*

Chinese and US researchers studied 1,103 subjects who were selected from the Nutrition Intervention Trial of Linxian, China, which enrolled 29,584 adults aged 40 to 69. Serum selenium levels were measured at the study's onset and participants were followed for next 15 years.

During the follow-up period, 516 deaths were recorded, including 116 from heart disease, 167 from stroke, 75 from esophageal squamous cell carcinoma, and 36 from gastric cardia cancer. Advanced age, male gender, low body mass index, and cigarette smoking emerged as factors that were more likely to be found in those who died compared to survivors. Significant associations were observed between higher serum selenium levels at the start of the study and a lower risk of death from esophageal squamous cell carcinoma and gastric cardia cancer. Subjects whose selenium concentrations were in the top 25% had a 69% reduction in gastric cardia cancer mortality risk compared to those whose selenium concentrations were in the bottom 25%. Those whose selenium concentrations were in the top 25% had a 65% lower risk of dying from esophageal squamous cell carcinoma compared to those with selenium concentrations in bottom 25%. Researchers found a similar but smaller association between higher selenium levels and lower incidence of heart disease, but found no trends associating selenium levels with stroke or total deaths, respectively.

—Dayna Dye

Reference

Wei WQ, Abnet CC, Qiao YL, et al. Prospective study of serum selenium concentrations and esophageal and gastric cardia cancer, heart disease, stroke, and total death. *Am J Clin Nutr*. 2004 Jan;79(1):80-5.

Folate Deficiency Causes Radiation-Like Damage to DNA

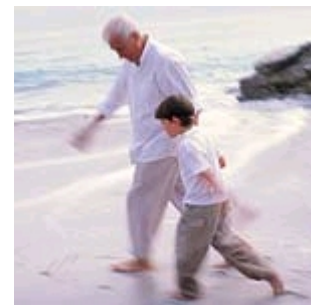
A deficiency in the B vitamin folate is more damaging than ionizing radiation in its effect on DNA strand breaks, according to a report published online by the Federation of the American Societies for Experimental Biology.*

DNA damage can lead to chromosomal aberrations and cancer. Folate and other vitamin and mineral deficiencies can cause DNA double-strand breaks, which are the most serious DNA lesion caused by ionizing radiation. Researchers irradiated human lymphocytes (white blood cells) at several doses, and cultured other lymphocytes in low concentrations of folate for 10 days. They found that folate deficiency and high doses of ionizing radiation caused DNA breaks and apoptosis. Ionizing radiation and folate deficiency also caused changes in cell cycle and gene expression.

While radiation activated DNA double-strand break repair genes, folate deficiency was not found to do the same.

The authors concluded that folate deficiency may be more detrimental than low doses of radiation and noted that insufficient dietary folate causes sperm damage. Because most individuals' exposure to radiation is relatively low, radiation may pose a smaller cancer risk than that incurred by a poor diet. According to the researchers: "Our results suggest that research on the biological effects of low-dose radiation, in humans, should take into account the nutritional status of the subjects, because folate (and other vitamin and mineral) deficiency could confound the effects of low-dose radiation or could even have a synergistic effect and increase the sensitivity of cells to radiation."

—Dayna Dye



Reference

Courtemanche C, Huang AC, Elson-Schwab I, Kerry N, Ng BY, Ames BN. Folate deficiency and ionizing radiation cause DNA breaks in primary human lymphocytes: a comparison. *FASEB J*. 2004 Jan; 18(1):209-11.

Folate Use Linked with Reduced Stroke Risk in Men

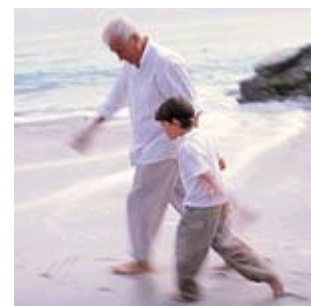
Vitamin B12 intake was associated with a lower risk of ischemic stroke and consumption of folate was significantly associated with lower risk, according to the results of a recent study published in the American Heart Association journal *Stroke*.*

In seeking to determine the role of folate and vitamins B6 and B12 in stroke prevention, researchers studied 43,732 men between the ages of 40 and 75 who were enrolled in the Health Professionals Follow-Up Study. Dietary information was obtained through the use of food frequency questionnaires administered at the study's onset and twice during the follow-up period ending in 2000.

The study found 455 ischemic strokes, 125 hemorrhagic strokes, and 145 strokes of unknown origin were recorded during the follow-up period. Analysis of dietary data associated vitamin B12 and folate intake with a lower risk of ischemic stroke. Men in the top one-fifth of folate intake had a 30% lower stroke risk than those in the lowest fifth. Multivariate analyses of the data confirmed that the benefit of folate was not explained by overall healthier lifestyles in those whose folate intake was high. Because vitamin supplements were the major source of folic acid, however, other components of supplement formulas could be responsible for the benefits observed.

The protective benefit of folate and vitamin B12 against stroke could be due to their association with blood homocysteine, which may damage the blood vessels by accumulating in the endothelial cells and generating free radicals. Earlier studies have determined that elevated plasma homocysteine is a risk factor for ischemic stroke. While vitamin B6 levels also have been correlated with homocysteine levels, the association is less strong than correlations between homocysteine and folate and between homocysteine and vitamin B12, respectively.

—Dayna Dye



Reference

He K, Merchant A, Rimm EB, et al. Folate, vitamin B6, and B12 intakes in relation to risk of stroke among men. *Stroke*. 2004 Jan;35(1):169-74. Epub 2003 Dec 11.

International Conference to Spotlight Anti-Aging Breakthroughs



In just three years, the International Anti-Aging Conference (formerly the Monte Carlo Anti-Aging Conference) has established itself as one of the world's premier learning conferences for health professionals and life extensionists who are dedicated to using cutting-edge science to improve longevity, attain optimal health, and prevent and treat age-related diseases and disorders.

The International Anti-Aging Conference attracts hundreds of physicians, scientists, organizations, and life extension enthusiasts from around the world. The most recent conference drew participants from 26 countries. The conference presents renowned speakers sharing the latest breakthroughs in anti-aging and life extension science, from nutrition and orthomolecular medicine to hormone replacement therapy and biotechnology. In addition to meeting and networking with

speakers and other participants, attendees have the opportunity to interact with exhibitors displaying cutting-edge protocols and products of interest to both the anti-aging health professional and enthusiast.

Phil Micans, vice president of International Anti-aging Systems and chairman of the three previous conferences, notes that "while other conferences are geared to those who are new to anti-aging medicine, the International Anti-Aging Conference appeals to those who are active and involved, and has thus been able to demonstrate the latest anti-aging developments as well as forecast imminent breakthroughs. This conference aims to keep people who are practicing and interested in anti-aging medicine on the cutting edge."

For more information about the 2004 Anti-Aging Conference, to be held September 2-4 in London, England, please contact the organizers directly by phone, fax, or email:

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Prince Albert of Monaco (center) poses with the speakers of the 3rd Monte Carlo Anti-Aging Conference.

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