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Selenium Supplements May Benefit Women Who Inherit the “Breast Cancer Gene”

Both animal and human studies have found that selenium, an essential dietary mineral, can reduce the risk of many different types of cancer. In a large study conducted about 10 years ago, researchers reported that 200 mcg daily of supplemental selenium lowered the risk of colon, lung, and prostate cancers by about half.

Now researchers have reported that selenium supplements might help reduce the risk of cancer in women who inherit mutations in the BRCA1 gene, one of the so-called breast cancer genes.

Normally, BRCA1 and BRCA2 are genes involved in repairing chromosome damage. They program the cell's production of chromosome repair enzymes. Without such damage control, the biological programming of normal cells would quickly get scrambled.

But a small number of women and men are born with mutations in either the BRCA1 or BRCA2 gene, which interfere with normal chromosome repair processes. Women with BRCA1 mutations have an 80 percent risk of developing breast cancer and a 40 percent risk of developing ovarian cancer sometime during their lifetime. Men with a BRCA1 mutation have a higher risk of both breast or prostate cancer.

In the most recent study, Steven A. Narod, MD, of the Centre for Research in Women's Health, Toronto, and researchers from the Hereditary Cancer Centre, Poland, investigated how selenium supplements might reduce chromosome damage in women with BRCA1 gene mutations.

In the first phase of their study, Narod and his colleagues studied 26 women with BRCA1 mutations and a close relative without these mutations. They drew blood from the women, then exposed lymphocytes (a type of immune cell) to a chemical that causes chromosome breaks. Women with BRCA1 mutations had 0.59 chromosome breaks per cell, while their healthy relatives had only 0.39 breaks.

In the second phase of the study, Narod drew blood from 32 women with BRCA1 mutations. After

exposing lymphocytes to the chromosome-breaking chemical, he found that there were 0.63 breaks per cell.

Narod then asked the women to take 690 mcg of selenium daily for up to three months. When he repeated the test, he found that the number of chromosome breaks had dropped to 0.40 per cell—a 37 percent decrease—and virtually equal to that of women without BRCA1 mutations.

He wrote that “we have shown that in most cases, these elevated levels [of chromosome damage] can be reduced to normal with oral selenium supplementation.”

The study was not long enough to determine whether the selenium would reduce the risk of breast cancer. However, in a previous study, Narod found that healthy cancer-free women had fewer chromosome breaks compared with those who had a family history of breast cancer.

Reference: Kowalska E, Narod SA, Huzarski T, et al. Increased rates of chromosome breakage in BRCA1 carriers are normalized by oral selenium supplementation. *Cancer Epidemiology Biomarkers & Prevention*, 2005;14(5):1302-1306. □

Perspectives...

The Link Between Insulin and Cancer

Over the years, a number of studies have found an link between elevated insulin levels and the risk of breast and other cancers. A recent study focused on how high-glycemic foods might promote cancers, whereas low-glycemic foods might protect against them.

High-glycemic foods, including sugars, refined grains, and potatoes, are digested rapidly and lead to sharp elevations in blood sugar and insulin levels. Low-glycemic foods, such as proteins and high-fiber, nonstarchy vegetables, are digested more slowly, resulting in more moderate increases in blood sugar and insulin.

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In the study, Jennie C. Brand-Miller, PhD, of the University of Sydney, Australia, found that high-glycemic meals lead to metabolic changes capable of promoting the growth of cancer. Although high insulin levels are known to promote some cancers, Brand-Miller focused on “insulin growth factor,” which is related to the hormone insulin.

She reported that high-glycemic carbs decreased levels of “insulin growth factor binding protein-3” (IGFBP-3). While that might sound pretty technical, what it means is really pretty simple.

IGFBP-3 can reduce the proliferation of cancer cells and can also trigger the death of cancer cells – in other words, it's good for you. Refined carbs lower IGFBP-3 levels, and reduced levels of IGFBP-3 have been associated with different types of cancer. In contrast, high-fiber, low-glycemic foods boost the protective effects of IGFBP-3.

All this is yet another reason to eat healthy foods and minimize your intake of junk foods. – JC

Mistletoe Extracts Comparable to Conventional Therapy in Bladder Cancer

Extracts of the herb mistletoe (*Viscum album*) have been used as an alternative treatment for cancer for more than 70 years in Europe. A new study has found the herb to be surprisingly effective in the treatment of bladder cancer.

Ursula Elsasser-Beile, MD, and her colleagues from the University of Freiburg, Germany, tracked the health of 30 patients – mostly elderly men – who had been previously treated surgically. As a follow-up therapy, the patients received six weekly treatments of 50 ml (about one and three-quarter ounces) of mistletoe extract, which was fed via a tube directly into the bladder.

The patients were divided into groups of three, and each group was treated with dosages ranging from 10 to 5,000 ng/ml of mistletoe lectins, considered the therapeutically active compounds. The extracts were retained in the bladder for two hours after each treatment.

After 12 months, 21 of the 30 patients were free of bladder cancer recurrences.

That recurrence rate is comparable to what is achieved with a conventional follow-up therapy consisting of bacillus Calmette-Guerin (BCG).

“In contrast to BCG, this treatment was excellently tolerated,” write Elsasser-Beile. “None of the patients had local or systemic side effects even at the highest dose of 5,000 ng/ml.”

Reference: Elsasser-Beile U, Leiber C, Wolf P, et al. Adjuvant intravesical treatment of superficial bladder cancer with a standardized mistletoe extract. *Journal of Urology*, 2005;174:76-79. □

Vitamin/Mineral Supplements Increase Survival Among Lung Cancer Patients

The recent death of ABC news anchor Peter Jennings has focused attention on the diagnosis and treatment of lung cancer. Although smoking tobacco increases the risk of lung cancer, most people diagnosed with the disease are nonsmokers.

In a recent study, Aminah Jatoi, MD, and her colleagues at the Mayo Clinic, Rochester, Minnesota, tracked the health of 1,129 patients who had been diagnosed with and treated for “non-small cell” lung cancer. Of these patients, 714 reported that they had been or recently begun taking multivitamins or other types of vitamin/mineral supplements. The other patients did not take supplements.

Jatoi found that people who took vitamin/mineral supplements lived on average more than twice as long as those who didn't. The average survival time was 4.3 years after diagnosis for vitamin/mineral users, compared with 2 years for nonusers. The overall risk of death from lung cancer among supplement users was only 46 percent.

After adjusting the data for other factors, such as tumor type and stage, treatment, age, and smoking history, people who took supplements still had a “survival advantage,” according to Jatoi. When all of these other factors were included, supplement users were 26 percent less likely to die from lung cancer.

Despite the findings, Jatoi concluded that it was still “premature to recommend” vitamin/mineral supplements with this type of lung cancer.

Reference: Jatoi A, Williams B, Nichols F, et al. Is voluntary vitamin and mineral supplementation associated with better outcome in non-small cell lung cancer patients? Results from the Mayo Clinic lung cancer cohort. *Lung Cancer*, 2005;49:77-84. □

Low-Dose Supplement Reduces Risk of Prostate Cancer in Some Men

A supplement containing small amounts of antioxidants can reduce the risk of prostate cancer among men with normal levels of prostate-specific antigen (PSA), an indicator of cancer risk.

Francois Meyer, MD, of Laval University, Quebec City, along with Canadian and French colleagues, analyzed the risk of prostate cancer among 3,616 men who had taken either placebos or a vitamin/mineral supplement daily for eight years. The supplement contained 120 mg vitamin C, 30 mg vitamin E, 6 mg (10,000 IU) beta-carotene, 100 mcg selenium, and 20 mg zinc.

Among men with normal PSA levels, the supplement led to almost half the risk of developing prostate cancer.

However, in men with an elevated PSA at the start of the study, the supplement led to a slight increase – “of borderline statistical significance” – in the risk of prostate cancer.

Reference: Meyer F, Galan P, Douville P, et al. Antioxidant vitamin and mineral supplementation and prostate cancer prevention in the SU.VI.MAX trial. *International Journal of Cancer*, 2005;116:182-186. □

Black Cohosh Benefits Found “Similar” to Hormone Therapy in Hot Flashes

Using the herb black cohosh (*Cimicifuga racemosa*) can significantly reduce symptoms of perimenopause, including hot flashes, moodiness, and vaginal dryness.

Ruediger Osmers, MD, PhD, and his colleagues from Hildesheim General Hospital, Germany, treated 272 women with either a standardized 40 mg extract of black cohosh (brand name Remifemin) or placebos for 12 weeks. The women had an average of 28 hot flashes each week before participating in the study.

The most significant reductions were in hot flashes. The benefit was “similar” to those in recent studies that used conventional hormone replacement therapy, wrote Osmers and his colleagues. He added that the results “may therefore be considered clinically relevant.”

Reference: Osmers R, Friede M, Liske E, et al. Efficacy and safety of isopropanolic black cohosh extract for climacteric symptoms. *Obstetrics and Gynecology*, 2005;105:1074-1083. □

Alpha-Lipoic Acid Boosts Benefits of Hyperbaric Oxygen Therapy

Hyperbaric oxygen (HBO) therapy, which exposes patients to high concentrations of oxygen, is widely used to treat chronic nonhealing wounds, such as diabetic ulcers and soft tissue infections. The drawback to HBO is that purified oxygen may increase free radical damage to tissues, thus exacerbating the injury. But supplemental alpha-lipoic acid, an antioxidant, could reduce the chances of side effects from HBO therapy.

Renata Alleva, MD, of the Orthopedic Institute in Bologna, Italy, and her colleagues treated 20 elderly men and women who had been diagnosed with diabetic foot injuries, ulcerations, and other types of nonhealing or slow healing damage. The patients underwent one HBO treatment daily for 30 days and were also given either a placebo or 300 mg of alpha-lipoic acid before and after each therapy session.

Among patients receiving the supplements, levels of both alpha-lipoic acid and vitamin E in-

creased in the blood. The increase in vitamin E was probably the result of it being recycled (so it could be reused) by alpha-lipoic acid.

More significantly, alpha-lipoic acid accelerated the healing process after HBO therapy. After 20 days of therapy, 60 percent of patients getting alpha-lipoic acid had smaller ulcerations. After completing all of the HBO treatments, 80 percent of the patients had smaller ulcerations, and some had benefited from total remissions. In contrast, no more than half the patients receiving HBO and placebos improved.

Tests also found that patients taking alpha-lipoic acid supplements had less free radical damage to both DNA and fats, as well as lower markers of inflammation.

Reference: Alleva R, Nasole E, Di Donato F, et al. alpha-lipoic acid supplementation inhibits oxidative damage, accelerating chronic wound healing in patients undergoing hyperbaric oxygen therapy. *Biochemical and Biophysical Research Communications*, 2005;333:404-410. □

Study Finds Depression May Be Related to High Levels of Omega-6 Fat

Feelings of depression may be related more to high brain levels of arachidonic acid rather than to low levels of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in the brain. That’s according to a study using a particular type of laboratory rat to investigate the chemistry of depression.

Arachidonic acid is a key omega-6 fat, whereas EPA and DHA are principal omega-3 fats. All are essential for normal health.

Pnina Green, PhD, of the Felsenstein Medical Research Center, Israel, and her colleagues compared brain levels of these fats in both FSL and normal laboratory rats. The FSL breed exhibits many of the characteristics of depressed people, including reduced appetite, less physical activity, and sleep disturbances. Previous studies have found that FSL rats’ behavioral and neurochemical problems can be normalized with antidepressants.

Green looked at arachidonic acid and EPA levels in several brain regions, including the hypothalamus and prefrontal cortex, of the FSL and normal rats. She found no significant differences in omega-3 fats in the brains of FSL and normal rats.

However, the FSL rats had significantly higher levels of arachidonic acid, ranging from 21 to 31 percent greater, depending on the region of the brain.

The findings are interesting because other researchers have found low levels of the omega-3 fats in the blood of depressed people, and omega-3

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Quick Reviews of Recent Research

• Arginine might help in sickle-cell anemia

Sickle-cell anemia, a genetic disease that primarily affects people of African descent, increases the risk of developing premature cardiovascular disease. Other researchers have shown that supplemental B vitamins and antioxidants can reduce symptoms of sickle-cell anemia. In this study, researchers reported that some of the biochemical consequences of sickle-cell anemia reduce the bioavailability of arginine, an amino acid required for normal blood vessel tone. The more seriously arginine activity was affected, the more likely subjects were to have pulmonary hypertension and an increased risk of death. Although the researchers did not suggest arginine supplementation, it might be of therapeutic value.

Morris CR, et al. *JAMA*, 2005;294:81-90.

• Resveratrol might fight influenza germs

Resveratrol, an antioxidant found in purple grapes and red wine, might be of some benefit in fighting flu symptoms. In a cell-culture study, Italian researchers found that resveratrol inhibited the replication of the flu virus. Meanwhile, in experiments with mice, injections of resveratrol after exposure to the flu virus increased survival by 40 percent, compared with animals receiving placebos. In addition, after six days viral levels in the lungs were 98 percent lower in the mice given resveratrol, again compared with those getting placebos.

Palamara AT, et al. *Journal of Infectious Diseases*, 2005;191:1719-1729.

• Low antioxidants increase esophageal problems

Barrett's esophagus is a complication of chronic gastroesophageal reflux, which alters some of the surface cells of the esophagus and increases the risk of cancer. In a study of 103 subjects, Welsh researchers

reported that people with Barrett's esophagus had significantly lower blood levels of antioxidants, including selenium, vitamin C, and carotenoids. An earlier study found that selenium was protective against esophageal cancer.

Clements DM, et al. *Journal of Clinical Pathology*, 2005;58:490-492.

• Avoiding milk may lower diabetes risk

Milk is considered a low-glycemic food in that it only moderately elevates blood sugar levels. However, it does increase levels of the hormone insulin, which promotes body fat and elevates blood pressure. British researchers investigated whether the risk of metabolic syndrome (Syndrome X), a form of prediabetes, was related to milk consumption. The researchers reported that women who did not drink milk were 45 percent less likely to develop metabolic syndrome. In addition, diabetes was also less common among women who did not drink milk.

Lawlor DA, et al. *Diabetic Medicine*, 2005;22:808-811.

• Carb intake linked to development of cataracts

In a study of 417 middle-age and elderly women participating in the Nurses' Health Study, researchers found that those eating the most carbohydrates were two and one-half times more likely to develop cortical cataracts, compared with women who ate the least carbohydrates. There was no relationship between the glycemic index of foods and cataract development. Cortical cataracts form on the periphery of the lens.

Chiu CJ, et al. *American Journal of Clinical Nutrition*, 2005;81:1411-1416.

• Vitamin B3 might benefit the skin

The topical use of a 5 percent niacinamide cream for 12 weeks, reduced fine lines and wrinkles, blotchiness, hyperpigmentation, and yellowing.

Bissett DL, et al. *Dermatologic Surgery*, 2005;31:860-865.

Depression and Omega-6 Fat...

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supplements often help in depression.

"The present findings may also explain the beneficial effect of EPA [omega-3 fish oils] in depressive patients...it is possible that EPA treatment leads to a normalization of the increased level of arachidonic acid rather than to an increase in the level of omega-3[s]..." Green wrote.

Arachidonic acid is found in vegetable oils and processed foods that are made with vegetable oils.

Reference: Green P, Gispan-Herman I, Yadid G. Increased arachidonic acid concentration in the brain of Flinders Sensitive Line rats, an animal model of depression. *Journal of Lipid Research*, 2005;46:1093-1096. □

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