

The NUTRITION REPORTER™

THE INDEPENDENT NEWSLETTER THAT REPORTS VITAMIN AND MINERAL THERAPIES © FEBRUARY 1999 VOL 10 No 2 BY JACK CHALLEM

Drinking Soymilk Lowers Estrogen, Genistein Protects Against Breast Cancer

Drinking one large glassful of soymilk daily reduces blood levels of estrone and estradiol, two principal forms of the female hormone estrogen, and lengthens the menstrual cycle, according to researchers.

Soymilk is rich in a family of naturally occurring plant estrogens called isoflavones. Considerable research suggests that these "phytoestrogens" can block the carcinogenic effect of actual estrogen in women. In addition, studies have found that longer menstrual cycles—and thus fewer lifetime cycles—are also associated with a reduced risk of estrogen-dependent cancers.

"There is a general agreement that hormones, in particular estrogens, are involved in the development of breast cancer," wrote Chisato Nagata, MD, and his colleagues at the Gifu University School of Medicine. "Our particular interest has been to study the possibility that soy consumption decreases the serum levels of female steroid hormones. This decrease, in turn, may ultimately help prevent the development of breast cancer."

Nagata's team asked 31 premenopausal women to consume 400 milliliters (about 13 ounces) of soymilk daily during three consecutive menstrual cycles. Each 400 milliliter serving contained about 109 mg of isoflavones, primarily genistein and daidzein. Estrogen levels in the women were compared with 29 women who followed their regular diet.

Although Nagata's findings were not statistically significant during the short study, they did show a strong trend toward lower blood levels of estrogen. By the end of the study, estrone levels decreased by 23 percent and estradiol levels were reduced by 27 percent among women drinking soymilk. In contrast, levels of these hormones increased by 0.6 percent and 4 percent, respectively, among the women not drinking soy milk.

Furthermore, women drinking soymilk had an increase of almost two days in the length of their third and fourth menstrual cycles. Women not drinking soymilk had a one-day decrease in menstrual cycle length.

"The present study suggests that high intake of soymilk may modify circulating estrogen concentrations and possibly alter menstrual cycle length, both of which may be potentially beneficial for lowering the risk of breast cancer," Nagata wrote.

In a separate study, researchers investigated the mechanisms by which genistein, the principal

isoflavone in soy, prevents breast cancer. Sanford H. Barsky, MD, of the University of California, Los Angeles, and his Chinese collaborators had previously found that genistein inhibited the proliferation of estrogen-dependent breast cancer cells.

In their latest experiments, using cell cultures, they found that genistein also inhibited the invasiveness of cancerous breast cells. In rodent studies, Barsky and his colleagues found that genistein blocked tumor growth, promoted apoptosis (cell death), and increased the activity of anticancer genes. Genistein also inhibited angiogenesis, the growth of blood vessels tumors need to expand.

References: Nagata C, Takatshuka N, Inaba S, et al., "Effect of soymilk consumption on serum estrogen concentrations in premenopausal Japanese women," *Journal of the National Cancer Institute*, 1998;90:1830-1835. Shao Z-M, Wu J, Shen Z-Z, et al., "Genistein exerts multiple suppressive effects on human breast carcinoma cells," *Cancer Research*, 1998;58:4851-4857. □

Beta-Carotene Shows Benefits After Radiation Exposure

Supplements of beta-carotene can reduce levels of free radicals in children exposed to radiation. That's the finding of a new study by Israeli researchers.

Ami Ben-Amotz, PhD, of Oceanographic and Limnological Research, Haifa, and his colleagues measured levels of conjugated dienes in 262 children who, years earlier, had been exposed to radiation after the Chernobyl nuclear accident. The children, who had emigrated from Ukraine to Israel, had abnormally high levels of conjugated dienes, a marker of free radical damage to fats.

Ninety-nine of the children were given 40 mg of natural beta-carotene (from *Dunaliella* algae) daily for three months. After the first and third months, Ben-Amotz measured conjugated dienes in the children and found that their levels had decreased significantly. Conjugated diene levels declined by 18 percent in boys and 46 percent in girls.

Previous research has shown that the effect of radiation can be modified when "radioprotectors" are administered before or during the radiation exposure. This study showed that beta-carotene may have some

Continues on next page

benefits years after radiation exposure.

Reference: Ben-Amotz A, Yatziv A, Sela M, et al., "Effect of natural b-carotene supplementation in children exposed to radiation from the Chernobyl accident," *Radiation and Environmental Biophysics*, 1998;37:187-193. □

Researchers Find Vitamin E Reduces Heart Risk in More Ways

One of the early steps in the development of coronary heart disease is the attachment of monocytes, a type of white blood cell, to artery walls. The monocytes then engulf oxidized low-density lipoproteins, migrate deeper into blood vessel walls, and form plaque deposits that eventually constrict blood flow.

Vitamin E, however, can prevent the adhesion of monocytes to blood vessel walls, according to a new study by Ishwalal Jialal, MD, PhD, of the University of Texas Southwestern Medical Center.

In recent cell-culture experiments, Jialal and his colleagues studied the behavior of monocytes, some of which had been enriched with vitamin E. After promoting adhesion of the monocytes to endothelial cells, Jialal found that vitamin E significantly reduced the activity of CD11b and VLA-4 adhesion molecules.

Vitamin E also inhibited the expression, or activation, of NF-kappa B, a gene transcription factor that promotes inflammation. Inflammation promotes the activation of adhesion molecules.

Other studies by Jialal have demonstrated that vitamin E reduces the oxidation of low-density lipoproteins, sometimes described as the "bad" cholesterol. Monocytes engulf oxidized LDL but do not go after normal LDL.

Reference: Islam KN, Devaraj S, Jialal I, "Alpha-tocopherol enrichment of monocytes decreases agonist-induced adhesion to human endothelial cells," *Circulation*, 1998;98:2255-2261. □

Vitamins E and C Supplements Help HIV-Infected Patients

Patients with HIV infections and AIDS often suffer multiple vitamin deficiencies, the result of either severe immune stress or nutrient loss from diarrhea. These deficiencies can lead to "oxidative stress," a state in which large numbers of destructive free radicals harm the body.

Supplements of vitamins E and C, however, can bolster the antioxidant defenses of HIV patients and even reduce virus concentrations, according to a study by researchers at the Toronto Hospital, Canada.

Johane P. Allard, MD, and his colleagues gave 49 HIV-infected patients either a placebo or supplements of 800 IU vitamin E and 1,000 mg vitamin C daily for three months. Not surprisingly, the vitamin group had

increased blood levels of vitamins E and C. The vitamin takers also had significant decreases in lipid peroxidation and malondialdehyde, markers of free radicals.

Allard also noted a trend toward "a reduction in viral load," pointing to a clinical benefit in slowing down HIV activity.

Reference: Allard JP, Aghdassi E, Chau J, et al., "Effects of vitamin E and C supplementation on oxidative stress and viral load in HIV-infected subjects," *AIDS*, 1998;12:1653-1659. □

Research Confirms the Herb Cat's Claw Confirmed as Antiinflammatory

The herb cat's claw is a powerful antioxidant and antiinflammatory, according to the first study to scientifically determine exactly why it works. The herb may also prevent intestinal damage from nonsteroidal antiinflammatory drugs (NSAIDs).

Known also as *una de gato* and, scientifically, as *Uncaria tomentosa*, the herb is a traditional Peruvian remedy for inflammation, arthritis, and gastritis. It's sold as an herbal immune booster in health food stores.

Manuel Sandoval-Chacon, PhD, and Mark J. S. Miller, PhD, of the Albany Medical College, New York, conducted cell and animal experiments to investigate the herb's specific biological properties.

In one of the experiments, human cells were exposed to peroxynitrite, a powerful free radical that can kill cells. When the cells were also exposed to cat's claw, they were protected from the peroxynitrite radicals.

Cat's claw also inhibited the activation of NF-kappa B, a gene transcription factor that promotes inflammation. The herb also inhibited the gene that codes for the enzyme that produces nitric oxide, a free radical also involved in inflammation.

"The antiinflammatory actions of cat's claw were registered at doses that are consistent with the practice of traditional medicine," wrote Sandoval-Chacon and Miller.

Reference: Sandoval-Chacon M, Thompson JH, Zhang X-J, et al. "Antiinflammatory actions of cat's claw: the role of NF-kB," *Alimentary Pharmacology and Therapeutics*, 1998;12:1279-1289.

Vitamin B2 Eases Migraines

Vitamin B2 (riboflavin) may help people with migraine headaches, according to a study by Belgian researchers.

The researchers, from the department of neurology at the University of Liege, treated 55 patients with a history of migraines. Some of the patients took 400 mg of riboflavin and others a placebo daily for three months.

Fifty-nine percent of the patients taking riboflavin improved by at least 50 percent. In contrast, only 15

percent of patients in the placebo group improved to the same extent.

Improvements were based on a reduction in the frequency of migraine headaches and in the number of days on which migraines occurred, as well as on a calculation of migraine severity.

The researchers wrote that migraines may be the result of a lack of cell energy—that is, a type of mitochondrial disease. Riboflavin plays a key role in cellular energy production.

Reference: Schoenen J, Jacqy J, Lenaerts M, “Effectiveness of high-dose riboflavin in migraine prophylaxis. A randomised controlled trial,” *Neurology*, 1998;50:466-470. □

Calcium Supplements Ease Premenstrual Symptoms

Calcium supplements can cut the physical and psychological symptoms associated with premenstrual syndrome (PMS) and menstruation by half, according to a study at St. Luke’s-Roosevelt Hospital Center, New York, and 11 other medical centers around the country.

In the study, 466 women with moderate to severe PMS symptoms, were given either 1,200 mg of elemental calcium (as part of calcium carbonate supplements) or placebo daily for three months. The women’s symptoms included breast tenderness, cramps, depression, and mood swings.

By the end of the study, women taking calcium supplements had a 48 percent drop in overall PMS symptoms and a 45 percent reduction in moodiness and depression. They also had substantially less water retention, swelling and bloating, food cravings, and pain, compared with the placebo group.

“PMS afflicts millions of premenopausal women and has been described as one of the most common disorders in women....Calcium treatment resulted in an approximately 50% reduction in total mean symptom scores with a significant benefit on symptoms such as depression, mood swings, headache, and irritability,” wrote lead investigator Susan Thys-Jacobs, MD.

Reference: Thys-Jacobs S, Starkey P, Bernstein D, et al., “Calcium carbonate and the premenstrual syndrome: effects on premenstrual and menstrual symptoms,” *American Journal of Obstetrics and Gynecology*, 1998;179:444-452. □

Cranberries May Control Cavities

You can use your toothbrush and dental floss to remove cavity-causing bacteria from your teeth. Or, according to a recent study, you might occasionally be able to use unsweetened cranberry juice.

Cranberries contain an antioxidant polyphenol that prevents bacteria from joining together to form plaque on

teeth, an early step in the development of cavities. Other research has found that the same compound prevents bacteria from adhering to the urinary tract, and cranberry juices and supplements have been found helpful in reducing the incidence of urinary tract infections.

In the study, Ervin I. Weiss, DMD, of Tel Aviv University, Israel, tested the effects of cranberry juice extract on various species of *Streptococcus* and *Actinomyces*, the principal bacteria that cause cavities. He tested the effects of the extract on other bacterial species as well.

The extract prevented the clumping together of 58 percent of the bacterial combinations tested. If the same effect occurred on teeth, it would greatly reduce the formation of dental plaque.

“The commercially available cranberry juice cocktail, which is widely consumed, is not suitable for oral hygiene purposes,” Weiss wrote. “To quench the tart taste, the product is sweetened with up to 12 percent fructose and dextrose (by weight), which may promote plaque accumulation and caries development.”

Many health food stores sell unsweetened cranberry juice concentrate, which can be diluted.

Reference: Weiss EI, Lev-Dor R, Kasham Y, et al., “Inhibiting interspecies coaggregation of plaque bacteria with a cranberry juice constituent,” *Journal of the American Dental Association*, 1998;129:1719-1723. □

Where Do Nutrients Come From? Studies Provide Answers

Two recent studies provide a look at the food sources of various nutrients consumed by American adults and children.

The research, by Amy F. Subar, PhD, and her colleagues at the National Cancer Institute included some surprises. For example, “although coffee is not a rich source of niacin, it was consumed so frequently by American adults that it provided nearly 8% of total niacin intake...” according to Subar.

Bread, soft drinks, cakes, cookies, and doughnuts provided 30 percent of the carbohydrates consumed by most Americans. Beef, poultry, and milk accounted for 40 percent of dietary protein.

The main sources of saturated fats were cheese, beef, milk, cakes, cookies, and doughnuts, which accounted for 40 percent of the total. Salad dressings, mayonnaise, margarine, and oils accounted for 43 percent of dietary polyunsaturated fats.

Orange and grapefruit juices, tomatoes, and fruit drinks provided 41 percent of Americans’ intake of vitamin C. Salad dressing, mayonnaise, margarine, and breakfast cereals contributed 34 percent of dietary vitamin E.

Breads and cereals were the principal dietary sources

Continues on next page

Quick Reviews of Recent Research

• Natural vitamin E absorbed better than synthetic

Researchers gave six subjects 150 mg of natural vitamin E and an equal amount of synthetic vitamin E. After one day, blood levels of natural vitamin E rose twice as high as synthetic vitamin E levels. Excretion of synthetic vitamin E was three times higher than that of natural vitamin E. This experiment indicated that natural vitamin E was preferentially retained and synthetic vitamin E was rapidly excreted by the body.

Traber MG, et al., *FEBS Letters*, 1998;437:145-148.

• Vitamin C protects against cadmium

In a study of laboratory mice, researchers found that vitamin C protected against cadmium-induced thyroid dysfunction.

Gupta P and Kar A, *Journal of Applied Toxicology*, 1998;18:317-320.

• Pycnogenol® may protect against tobacco carcinogen

In an experiment with rodent lung and cancer cells, researchers determined that Pycnogenol®, an antioxidant complex derived from the bark of French maritime pine trees, increased protection against nitrosamine. The higher dose of Pycnogenol® had a greater effect than a lower dose.

Huynh HT and Teel RW, *Cancer Letters*, 1998; 132:135-139.

• Isoflavones inhibit bladder cancer growth

In a cell-culture study, soy isoflavones halted the growth of human and rodent bladder cancer cells, in part

by triggering their self-destruction. In a mouse study, soy protein, isoflavones, and genistein decreased the size of rapidly growing bladder tumors by 40 percent.

Zhou J-R, et al., *Cancer Research*, 1998; 58:5231-5238.

• Beta-carotene blocks sun's immune suppression

Excessive exposure to ultraviolet rays in sunlight can suppress the immune system and reduce the body's resistance to infection and cancer. In a study of 31 middle-age and elderly men who had been eating a low-carotenoid diet, beta-carotene supplements restored normal immune function as measured by "delayed-type hypersensitivity" testing.

Herraiz LA, et al., *Journal of the American College of Nutrition*, 1998;17:617-624.

• Does beta-carotene increase lung cancer risk?

In a study using ferrets, high doses of synthetic beta-carotene resulted in the formation of precancerous lesions. Animals given beta-carotene supplements and also exposed to tobacco smoke had a fourfold increase in precancerous lesions. (The researchers did not compare the effects with those of natural beta-carotene. – Editor)

Wang X-D, et al., *Journal of the National Cancer Institute*, 1999;91:60-66.

• Resveratrol may protect blood vessels

In a cell-culture study, researchers found that resveratrol, an antioxidant found in wine and peanuts, reduced the activity of "adhesion molecules," which promote atherosclerosis. By inhibiting adhesion molecules, resveratrol prevents white blood cells from adhering to endothelial cells.

Ferrero ME, et al., *American Journal of Clinical Nutrition*, 1998;68:1204-14.

• Vitamin B12 helpful in ALS

Twenty-four patients with amyotrophic lateral sclerosis were given either high- or low-dose injections of vitamin B12. Patients given high doses (25 mg/day) had improved muscle function after four weeks.

Kaji R, et al., *Muscle & Nerve*, 1998;21:1775-1778.

Where Nutrients Come From...

Continues from previous page

of vitamin B1, vitamin B2, vitamin B3, and folic acid. Cereal was the leading source of vitamin B6.

Carrots were the leading source of carotenoids, followed by tomatoes, spinach and other greens, and sweet potatoes. Together, they contributed 72 percent of dietary carotenoids consumed by American adults.

Among children ages 2-18, milk, bread, cakes, cookies, doughnuts, beef, and cheese were among the top 10 food sources of carbohydrates, fats, and protein. Milk alone was the principal dietary source of protein, overall fat, and saturated fat. Fruit drinks, which contain little juice, contributed 14 percent of childrens' dietary vitamin C.

Overall, the diets of both adults and children were dominated by processed rather than fresh foods.

References: Subar AF, Krebs-Smith S, Cook A, et al., "Dietary sources of nutrients among US adults, 1989 to 1991," *Journal of the American Dietetic Association*, 1998;98:537-547. Subar AF, Krebs-Smith S, Cook A, et al., "Dietary sources of nutrients among US children, 1989-1991," *Pediatrics*, 1998;102:913-923. □

THE NUTRITION REPORTER™ (ISSN 1079-8609) is published monthly except for August and December. This issue, Vol 10 No 1, © February 1999 by Jack ChalleM. All rights reserved. Reproduction without written permission is prohibited. Phone: (503) 642-1372. Fax: (503) 649-8948. Email addresses: Jack_ChalleM@class.orednet.org or challeM@compuserve.com. This newsletter is strictly educational and not intended as medical advice. For diagnosis and treatment, consult your physician. Subscriptions are \$25 per year in the U.S.; either \$32 U.S. or \$48 CDN for Canada; and \$38 for other countries, payable in U.S. funds through a U.S. bank. The Nutrition Reporter is a trademark (TM) of Jack ChalleM.

THE NUTRITION REPORTER™

Post Office Box 5505
Aloha, OR 97006-5505 USA

Editor and Publisher: **Jack ChalleM**

Medical Advisors:

London H. Smith, MD Portland, Oregon • Richard P. Huemer, MD Lancaster, California
Ralph K. Campbell, MD Polson, Montana • Peter Langsjoen, MD Tyler, Texas
G. Edward Desaulniers, MD The Shute Institute Medical Clinic London, Ontario
Marcus Laux, ND Pacific Palisades, California

