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Vitamin C, Beta-Carotene Supplements Reverse Precancerous Damage to Stomach

For years, people ate bland foods or took prescription antacid medicines to treat stomach ulcers. Then, a few years ago, doctors discovered that most stomach ulcers were caused by a common bacterium, *Helicobacter pylori*. A round of antibiotics cured the ulcer-causing infection.

But *H. pylori* has turned out to be a far more insidious bug. A chronic infection with *H. pylori* depletes gut levels of antioxidant vitamins, perhaps because localized inflammation generates large numbers of free radicals. These free radicals are quite capable of mutating stomach wall cells, which is probably why chronic *H. pylori* infection also increases the risk of developing stomach cancer.

Now, researchers have found that supplements of beta-carotene or vitamin C, or antibiotic therapy, can halt and even reverse precancerous cell changes in people infected with *H. pylori*. Pelayo Correa, MD, of Louisiana State University, New Orleans, asked 631 subjects with precancerous changes to stomach cells to take 30 mg of beta-carotene or 2 grams of vitamin C daily for six years, to undergo standard 14-day antibiotic treatment, or to take various combinations or a placebo. Changes to the gut were examined either through endoscopy or biopsy after three and six years.

All three treatments – beta-carotene, vitamin C, and antibiotics – resulted in significant increases in the rate of cell regression, or return to normal. In the treatment of nonmetaplastic atrophy, a type of precancerous cell change, people receiving beta-carotene were 5.1 times more likely to improve than those taking placebos. People taking vitamin C or antibiotics were 5 times and 4.8 times more likely to improve. Similarly, people with intestinal metaplasia, another type of precancerous change, were 3.4 times more likely to improve with beta-carotene, 3.3 times with vitamin C, and 3.1 times with antibiotics.

“Gastric cancer is the second most common fatal cancer in the world, and the 5-year survival rates are under 20% in most countries....our study suggests a

benefit in retarding progression of premalignant gastric lesions,” Correa and his colleagues wrote.

In a separate study, a team of researchers from La Sapienza University, Rome, Italy, evaluated 58 patients with precancerous intestinal metaplasia after antibiotic treatment for *H. pylori* infections. Half of the patients were given either 500 mg of vitamin C daily for six months or no further treatment at all.

At the end of the study, Angelo Zullo, MD, and his colleagues found a reversal of intestinal metaplasia on about one-third of the patients taking vitamin C. In contrast, only one of the patients (technically, 3.4 percent) from the other group improved.

“Ascorbic acid is the main antioxidant agent present in gastric juice, where its concentration is normally found to be fourfold higher than in the plasma,” Zullo wrote.

Reference: Correa P, Fontham ETH, Bravo JC, et al. Chemoprevention of gastric dysplasia: randomized trial of antioxidant supplements and anti-*Helicobacter pylori* therapy. *Journal of the National Cancer Institute*, 2000;92:1881-1888. Zullo A, Rinaldi V, Hassan C. Ascorbic acid and intestinal metaplasia in the stomach: a prospective randomized study. *Alimentary Pharmacology and Therapeutics*, 2000;14:1303-1309.

□

Researchers Find that a Combination of Ginkgo and Ginseng Improves Memory

People often use *Ginkgo biloba* to improve memory problems, but the supportive studies have also been offset by research showing a lack of benefits from the herb.

Now, British researchers have found that a combination of ginkgo and ginseng (*Panax ginseng*) improves memory in healthy middle-age adults. Ginseng is widely considered to enhance physical stamina and to be an adaptogen – that is, an herb that bolsters resistance to stress.

Keith A. Wesnes, PhD, honorary professor of

Continued on next page

psychology at Northumbria University and a researcher at Cognitive Drug Research Ltd., England, gave 256 healthy men and women, ages 38-66, supplements containing one of the following: 60 mg of a standardized ginkgo extract and 100 mg of a standardized ginseng extract twice daily; 120 mg of ginkgo and 200 mg of ginseng in one daily dose; or a placebo daily for 14 weeks.

Based on rigorous memory and cognitive testing, Wesnes found that “the volunteers who were taking the medication [i.e., herb] were remembering more information than those taking placebo.”

The study was distinguished by its healthy middle-age subjects, in contrast to research trials that have tested the herb on seniors suffering from Alzheimer’s disease.

The benefits were seen after four weeks of supplementation and continued through the end of the study, with the greatest effects noted during memory testing six hours after the morning dose. The improvements ranged from 6.4 to 8.8 percent over the 14-week study and averaged 7.5 percent.

Wesnes reported that several types of memory functions improved, including immediate and delayed word recall, word recognition, and picture recognition.

“There are no known major health risks associated with either ginkgo or ginseng, and they are readily available over the counter,” Wesnes wrote. “As people enter their late middle age, concerns about dementia become more widespread, and the opportunity to take an ‘herbal’ preparation to help prevent the onset of mental decline will be attractive to many.”

Reference: Wesnes KA, Ward T, McGinty A, et al. The memory enhancing effects of a Ginkgo biloba/Panax ginseng combination in healthy middle-aged volunteers. *Psychopharmacology*, 2000;152:353-361. □

High Intake of Fish Tied to Major Reduction in Stroke Risk Among Women

Regularly eating “dark-meat fish,” such as salmon, can significantly reduce the risk of stroke in middle-age women, researchers report. Their finding is consistent with a large body of research showing that fish – and the omega-3 fatty acids they contain – have diverse cardiovascular benefits.

Hiroyasu Iso, MD, PhD, of the Harvard Medical School, Boston, and his colleagues tracked the health of almost 80,000 women who ranged from 34 to 59 years in age at the start of the 14-year study.

The strongest association was a reduction in thrombotic stroke, caused by blood clots in the brain, among women who were not regularly taking

aspirin. Other major types include embolic strokes, in which a blood clot from another part of the body migrates to the brain, and hemorrhagic stroke, which involves a leaky or burst blood vessel in the brain.

“Risk of thrombotic infarction [death of cells because of a blood clot] was significantly reduced by 48 percent among women who ate fish 2 to 4 times per week,” Iso and his colleagues wrote in *JAMA*.

Women who ate fish one, two, or three times per month had a 7 percent lower risk of any type of stroke, compared with women who ate fish less than once per month. Those who consumed fish once a week were 22 percent less likely to suffer a stroke, and those who ate fish at least five times a week were 52 percent less likely to have a stroke.

Fish consumption also lowered the risk of embolic stroke, but not hemorrhagic stroke.

Other studies have found that consumption of fish rich in omega-3 fatty acids – including salmon, tuna, and sardines – reduces blood pressure and the risk of blood clots. Five ounces of salmon contain about 7.5 grams of omega-3 fatty acids.

Reference: Iso H, Rexrode KM, Stampfer MJ, et al. Intake of fish and omega-3 fatty acids and risk of stroke in women. *JAMA*, 2001;285:304-312. □

“Mixed Tocopherol” Vitamin E and Selenium May Prevent Prostate Cancer

Over the past few years, several studies have found that supplements of selenium and alpha tocopherol, the most biologically active form of vitamin E, reduce the risk of prostate cancer. The latest research indicates another important player: gamma tocopherol, a form of vitamin E found in “mixed tocopherol” supplements.

Kathy J. Helzlsouer, MD, of the Johns Hopkins University School of Hygiene and Public Health, Baltimore, and her colleagues followed the health of 10,456 American men who donated blood in 1989. Between 1990 and 1996, 110 of the men were diagnosed with prostate cancer.

Helzlsouer and her colleagues investigated the relationship between specific nutrients and the men’s risk of prostate cancer. They compared blood levels of alpha tocopherol, gamma tocopherol, and selenium in each of the men with prostate cancer and men without the disease.

Men with the highest blood levels of gamma tocopherol were five times less likely to develop prostate cancer, compared with men who had low levels of the nutrient. While alpha tocopherol and selenium were protective, their effect was significant only when combined with gamma tocopherol.

Helzlsouer suggested that future clinical trials test a combination of both alpha and gamma toco-

pherol in the prevention of prostate cancer.

Reference: Helzlsouer KJ, Huang Y-Y, Alberg AJ, et al. Association between α -tocopherol, γ -tocopherol, selenium, and subsequent prostate cancer. *Journal of the National Cancer Institute*, 2000;92:2018-2023. □

High Doses of Vitamin C Supplements Boost Bone Density in Women

A study of almost 1,000 postmenopausal California women has found that high doses of vitamin C supplements enhance bone density and reduce the risk of osteoporosis, especially when combined with calcium supplements and estrogen-replacement therapy.

Elizabeth L. Barrett-Connor, MD, of the University of California, San Diego, analyzed the relationship between vitamin C supplements and bone density among 994 women living in Rancho Bernardo, a southern California community. The women ranged in age from 50 to 98, and 277 of them regularly took vitamin C supplements, ranging from 100 to 5,000 mg daily.

Overall, vitamin C users had 3 percent greater bone density at several sites, compared with nonusers. Bone density was generally greater among women taking both vitamin C and estrogen, and still greater among women taking vitamin C, calcium, and estrogen.

Barrett-Connor wrote that “women taking vitamin C plus calcium and estrogen had 13.5 percent higher BMD [bone mineral density] at the wrist, 9.5 percent higher BMD at the femoral neck, and 6.0 percent higher BMD at the total hip.”

Vitamin C is required for the body’s synthesis of collagen protein, a key step in the development of bone matrix mineralization. The vitamin also stimulates alkaline phosphatase activity, a marker of bone cell formation.

“The optimal dose cannot be determined from the present report, but the highest BMD levels were observed among women taking 1000 mg/day or more,” Barrett-Connor concluded.

Reference: Morton DJ, Barrett-Connor EJ, Schneider DL. Vitamin C supplement use and bone mineral density in postmenopausal women. *Journal of Bone and Mineral Research*, 2001;16:135-140. □

High Dietary Intake of Lycopene May Help Protect Men’s Hearts

Low dietary intake of lycopene, the red carotenoid found in tomatoes, has been linked to an increased risk of prostate and other cancers. Now, researchers have found that low blood levels of lycopene may predispose men toward coronary artery disease.

Jukka T. Salonen, PhD, and his colleagues at the University of Kuopio studied 520 middle-age men and women living in eastern Finland. They measured blood levels of lycopene and used ultrasound to measure the thickness of the intima-media, part of the carotid artery wall.

In men, low levels of lycopene were associated with an 18 percent greater thickness of the intima-media. Increased thickness of the carotid artery is a sign of early cardiovascular disease that has been shown to be predictive of heart attacks.

There was no relationship between lycopene and heart disease in women. The researchers explained this difference by noting that women tend to have better overall diets.

Reference: Rissanen T, Voutilainen S, Nyyssonen K et al. Low plasma lycopene concentration is associated with increased intima-media thickness of the carotid artery wall. *Arteriosclerosis, Thrombosis and Vascular Biology*, 2000;20:2677-2681. □

Chasteberry Herbal Extract Reduces PMS Symptoms, Study Demonstrates

The herb chasteberry has been used historically to dampen sexual desire in women and to relieve symptoms of premenstrual syndrome (PMS). In what may be the first placebo-controlled study of the herb, German researchers have reported that it clearly eases PMS symptoms.

Rudiger Schellenberg, MD, and his colleagues at the Institute for Health Care and Science in Huttenberg, gave 170 women either a standardized 20 mg extract of chasteberry (*Vitex agnus castus*) or a placebo daily for three menstrual cycles. All of the women had been diagnosed with PMS symptoms – including irritability, mood alteration, anger, headache, breast fullness, bloating, and other symptoms – at the start of the study.

Women taking the chasteberry supplements benefited from significant improvements in five of their six main PMS symptoms. Overall, they had improvements in irritability, mood alteration, anger, headache, and breast fullness, but not in bloating.

Fifty-two percent of the women taking chasteberry reported that their PMS symptoms decreased by more than half. Among women taking placebos, only 24 percent reported such improvements. All improvements were confirmed by examining physicians. Side effects were minimal and were about the same in women taking the herb and the placebo.

Reference: Schellenberg, et al. Treatment for the premenstrual syndrome with *agnus castus* fruit extract: prospective, randomized, placebo controlled study. *British Medical Journal*, 2001;322:134-137. □

Quick Reviews of Recent Research

• Vitamin E lowers risk of colorectal cancer

Researchers asked 29,000 male cigarette smokers to take a relatively low dose of vitamin E (50 IU), beta-carotene (20 mg), both, or a placebo daily for five to eight years. Men taking vitamin E had a slightly reduced risk of developing colorectal cancer. (Larger amounts might have further reduced the risk of colorectal cancer.) Beta-carotene did not increase protection or risk of colorectal cancer.

Albanes D, et al. *Cancer Causes and Control*, 2000;11:197-205.

• Carotenoids ease inflammation

High levels of C-reactive protein, a marker of inflammation, significantly increase the risk of coronary artery disease. In a study of 4,557 young and middle-age men and women, researchers found that high blood levels of the major dietary carotenoids – alpha-carotene, beta-carotene, beta-cryptoxanthin, lycopene, and lutein/zeaxanthin – were associated with low levels of C-reactive protein.

Kritchevsky SB, et al. *American Journal of Epidemiology*, 2000;152:1065-1071.

• Low vitamin B12 may impair brain function

Researchers studied 48 adolescents who had consumed vegan (macrobiotic) diets up to the age of six, followed by lactovegetarian or omnivorous diets thereafter, and 24 adolescents fed omnivorous diets from birth through ages 10-18. Thirty-one of the previously macrobiotic subjects were deficient in vitamin B12, based on levels of methylmalonic acid. Testing revealed that low vitamin B12 levels reduced were associated with decreased cognitive function.

Louwman MWJ, et al. *American Journal of Clinical Nutrition*, 2000;72:762-769.

• Herbs relieve prostate symptoms

A group of 543 men with early signs of benign prostatic hyperplasia (BPH) received a daily supplement containing extracts of saw palmetto and nettle root or the prostate drug finasteride. Both treatments were equally effective in reducing urinary symptoms related to BPH, but the herbal product resulted in fewer side effects.

Sokeland J. *British Journal of Urology*, 2000;86:439-442.

• Vitamin E may help allergies

Allergic reactions, including asthma, rhinitis, and hayfever, are characterized by elevated levels of immunoglobulin E (IgE) antibodies. Previous animal studies have found that vitamin E reduces IgE levels. In this study of 2,633 allergic subjects, higher vitamin E levels were associated with lower levels of IgE. Each 1 mg increase in vitamin E intake, up to 7 mg,

was related to a 5.2 percent reduction in IgE levels.

Fogarty A, et al. *Lancet*, 2000;356:1573-1574.

• Vitamin E reduces bleeding in Norplant users

Norplant, a hormone-containing contraceptive, is inserted under the skin of women. One major side effect is that the drug increases the risk of endometrial bleeding. Researchers asked 36 Norplant users and 25 nonusers to take either 200 mg of vitamin E daily or a placebo for 10 days a month for three months. On average, bleeding days dropped from 18 days during the first month to about 7.5 days.

Subakir SB, et al. *Toxicology*, 2000;173-178.

• Passive smokers have low carotenoid levels

Smokers have lower blood levels of antioxidant nutrients. In a study of 1,590 people, researchers found that people exposed to second-hand smoke at home had low blood levels of total carotenoids, beta-carotene, alpha-carotene, and cryptoxanthin. These low levels may have been due to exposure to free radicals in tobacco smoke or may be the result of eating diets similar to those of smokers. Previous studies have found that smokers tend to eat small amounts of carotenoid-rich fruits and vegetables.

Alberg AJ, et al. *American Journal of Clinical Nutrition*, 2000;72:1575-1582.

• Low lutein and zeaxanthin linked to AMD

Low levels of two carotenoids, lutein and zeaxanthin, are associated with a high risk of age-related macular degeneration (AMD). Both carotenoids form the "macular pigment," which plays a crucial role in vision and in protecting the eye from AMD. In this study, researchers analyzed lutein and zeaxanthin levels in the retinas from 56 eye donors with AMD and 56 eye donors without the disease. The researchers found that eyes containing the greatest amount of lutein and zeaxanthin were 82 percent less likely to have AMD.

Bone RA, et al. *Investigative Ophthalmology and Visual Science* 2001;42:235-40

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