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Studies Find that People Lose More Fat, Less Muscle and Bone on High-Protein Diets

Diets that limit a person's intake of calories can help reduce body fat and, unfortunately, muscle as well. It's far better to preserve muscle while losing fat, because greater muscle mass efficiently burns sugar and fat. The best solution, according to a recent study, may be a moderately high-protein diet.

Researchers from the University of Illinois, Champaign-Urbana, asked 24 overweight women, ages 45-56 years, to follow one of two 1,700-calorie diets for 10 weeks. Some of the women ate a conventional low-calorie diet consisting of 55 percent carbohydrates, 15 percent protein, and 30 percent fat. Other women ate a higher protein, lower carbohydrate diet containing 40 percent carbs, 30 percent protein, and 30 percent fat.

Women in both groups lost about the same amount of weight, an average of 16 pounds. However, women on the high-carb diet also lost considerable muscle mass.

Those eating the high-carb diet lost an average of 10.4 pounds of body fat and 3 pounds of muscle mass. In contrast, women eating the higher protein diet lost an average of 12.3 pounds of fat and only 1.7 pounds of muscle mass.

In addition, women eating the higher protein diet also benefited from higher levels of thyroid hormones and a higher metabolic rate – meaning that they were more efficiently burning calories.

Meanwhile, a separate study has found that, contrary to popular opinion, diets high in protein do *not* appear to increase bone loss or the risk of osteoporosis. Marian T. Hannan, PhD, of the Hebrew Rehabilitation Center for Aged Research and Training Institute, Boston, tracked the health of 392 women and 224 men in the Framingham Osteoporosis Study. The subjects ranged in age from 68-91 years at the start of the study.

The participants' diets were assessed through questionnaires and their bone density was measured at three sites, the femur, spine, and radius. Four years later, their bone density was again measured.

The average intake of animal protein was 68 grams daily, or about 16 percent of their diets, which is the U.S. government recommended amount. However, animal protein intake ranged from 17 grams to 153 grams daily.

Hannan found that people consuming the least animal protein lost about twice the bone-mineral density in the femur and spine over the four-year period, compared with those who consumed the most protein. There was little change in bone-mineral density in the radius among any of the participants.

"Contrary to expectations, elders with animal protein intake up to several-fold greater than the RDA (Recommended Dietary Allowance) also had the least bone loss after controlling for known confounders," Hannan wrote. "Nonanimal sources of protein were not related to bone-mineral density."

References: Shiue H, Sather C, Layman DK. Reduced carbohydrate/protein ratio enhances metabolic changes associated with weight loss diet. Poster presentation, Annual meeting of the Federation of American Societies for Experimental Biology, Orlando, Fla, April 2001. Hannan MT, Tucker KL, Dawson-Hughes B, et al. Effect of protein on bone loss in elderly men and women: the Framingham osteoporosis study. *Journal of Bone and Mineral Research*, 2000;15:2504-2512. □

Perspectives...

Vitamin C Isn't All That Bad, Is It?

Maybe some journalists get a kick out of scaring the hell out of people. Or, more likely, they don't stop to think about what they're writing when it comes to the latest health research.

Two recent studies have slammed vitamin C. But guess what? Vitamin C is still an essential nutrient, and most people don't get enough of it.

Reporting on one study, reporters wrote that vitamin C could damage genes, which could conceivably increase the risk of cancer. But it turned out that

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the study was done in a test tube and has little if any bearing on people. In people, vitamin C works in concert with other antioxidants to *prevent* genetic damage, as numerous studies have found.

Another study found that vitamin C supplements increased the thickness of a major artery, suggesting that the vitamin caused cardiovascular disease. But it turned out that this study simply looked at general relationships between dietary patterns and disease, not an actual cause and effect. More than 50 other studies have shown that vitamin C *reduces* the risk of cardiovascular disease.

It's easy to write scary news stories, and people often feel jerked around by contradictory research. It's much harder for reporters and television anchors to convey the overall context of research. But the latter is what is sorely needed.

In case you're wondering, I'm still taking my vitamin C...and plenty of it. – Jack Challem

Diverse Intake of Carotenoids May Reduce Risk of Breast Cancer

Although the details differ, two groups of researchers have found that a high intake of carotenoids may reduce the risk of breast cancer and, conversely, low carotenoid levels may increase the risk.

Yang Cha Lee-Kim, PhD, of Yonsei University, South Korea, and her colleagues compared blood levels of beta-carotene, lutein/zeaxanthin, cryptoxanthin, lycopene, alpha-carotene, and vitamins A and E in 160 breast cancer patients and 229 healthy women.

Premenopausal women with the highest blood levels of lutein/zeaxanthin, beta-carotene, and vitamin E were associated with 87, 67, and 59 percent reductions in breast cancer risk, respectively. In postmenopausal women, lutein/zeaxanthin, beta-carotene, and vitamin E were associated with 88, 72, and 87 percent reductions in breast cancer risk, respectively.

In a separate study, Paolo Toniolo, MD, of the New York University School of Medicine, and his associates compared blood levels of several carotenoids among 270 women with breast cancer and 270 healthy subjects.

Women with the lowest total levels of carotenoids in the blood were more than two times more likely to develop breast cancer, as were women with the lowest levels of either beta-carotene or lutein. In addition, women with the lowest levels of cryptoxanthin were about two-thirds more likely to develop breast cancer.

Although these studies do not show a clear cause-and-effect relationship, they do support the idea that high levels of some carotenoids (and vita-

min E) may reduce a woman's risk of breast cancer. In addition, carotenoid levels reflect, to some degree, intake of vegetables and fruit and the many other antioxidants (e.g., flavonoids) they contain.

References: Kim MK, Ahn SH, Lee-Kim YC. Relationship of serum a-tocopherol, carotenoids and retinol with the risk of breast cancer. *Nutrition Research*, 2001;21:797-809. Toniolo P, Van Kappel AL, Akhmedkhanov A, et al. Serum carotenoids and breast cancer. *American Journal of Epidemiology*, 2001;153:1142-1147. □

Doctors Find that Alpha-Lipoic Acid Stops Decline in Alzheimer's Patients

One of the most original recent medical reports began when a group of German physicians gave 600 mg daily of alpha-lipoic acid to a 74-year-old diabetic patient with polyneuropathy (nerve disease). Alpha-lipoic acid, a naturally occurring antioxidant, is an approved drug in Germany and an over-the-counter dietary supplement in the United States.

The patient, who had also been diagnosed with mild Alzheimer's disease, was expected to experience a progressive decline in his cognitive abilities. But several tests have found that the patient's mental functions have not declined any further.

"Oxidative stress and energy depletion are characteristic biochemical hallmarks of Alzheimer's disease," noted Klaus Hager, MD, of the department of medical rehabilitation and geriatrics at the Henrietta Trust, Hannover. Alpha-lipoic acid functions as both a potent antioxidant and a key player in the production of cellular energy.

Hager and his colleagues then treated eight other patients diagnosed with probable mild-to-moderate Alzheimer's disease, giving them 600 mg of alpha-lipoic acid daily for about one year. They measured the cognitive abilities of all the patients before and after supplementation with two standard tests, the mini-mental state examination and the cognitive subscale of the Alzheimer's disease assessment scale.

Although Hager did not use a comparative placebo group, the responses of the nine patients were striking. "After initiating treatment with alpha-lipoic acid, the test results remained constant over the period of nearly one year of monitoring," he wrote. Normally, Alzheimer's patients are expected to drop eight to eleven points a year on their test scores.

In a separate study, Tory Hagen, PhD, of Oregon State University, Corvallis, supplemented the diets of young and old laboratory rats with alpha-lipoic acid, then compared the activity of the animals' heart cells.

Hagen found that alpha-lipoic acid reduced levels of free radicals in the old rats' heart cells to

levels comparable to those in heart cells from untreated young rats. In addition, DNA damage decreased by 30 percent in heart cells from old rats, and levels of vitamin C doubled (likely through antioxidant recycling). Essentially, old rats given alpha-lipoic acid developed younger hearts.

References: Hager K, Marahrens A, Kenkies M, et al. Alpha-lipoic acid as a new treatment option for Alzheimer type dementia. *Archives of Gerontology and Geriatrics*, 2001;32:275-282. Suh JH, Shigeno ET, Morrow JD, et al. Oxidative stress in the aging rat heart is reversed by dietary supplementation with (R)-a-lipoic acid. *FASEB Journal*, 2001;15:700-706. □

Researchers Find that Fruits and Vegetables Contain “Natural” Aspirin

Researchers have identified another way that fruits and vegetables promote health: these foods are high in salicylic acid, the active ingredient in aspirin. That means they produce contain respectable amounts of a powerful anti-inflammatory compound.

John R. Paterson, PhD, MBChB, of the Royal Infirmary, Dumfries, Scotland, and his colleagues measured blood levels of salicylic acid among vegetarians and nonvegetarians who were not taking aspirin, as well as among diabetics who were taking 75 mg aspirin daily.

Paterson found that vegetarians had, on average, 63 percent higher blood levels of salicylic acid than did nonvegetarians. Some of the vegetarians had as much salicylic acid in their blood as did the diabetics taking aspirin.

Aspirin consists of acetylsalicylic acid, which the body breaks down into salicylic acid. The levels of salicylic acid among the vegetarians is sufficient enough to inhibit the activity of cyclooxygenase-2 (Cox-2), a key enzyme involved in the body's production of inflammatory compounds.

The researchers also noted that “many fruits and vegetables contain salicylates but, in particular, herbs and spices contain the greatest concentrations.”

Reference: Blacklock CJ, Lawrence JR, Wiles D, et al. Salicylic acid in the serum of subjects not taking aspirin. Comparison of salicylic acid concentrations in the serum of vegetarians, non-vegetarians, and patients taking low dose aspirin. *Journal of Clinical Pathology*, 2001;54:553-555. □

Latest Study Finds that Unsweetened Cranberry Concentrate Reduces UTIs

A new study has confirmed that drinking about one and a half ounces of cranberry juice concentrate daily greatly reduces a woman's risk of developing urinary tract infections (UTIs).

As many as 60 percent of all women have at

least one UTI during their lifetime, and approximately 11 million American women receive prescriptions for UTIs each year.

Tero Kontiokari, MD, PhD, of the University of Oulu, Finland, and his colleagues asked 150 women to take 1.69 ounces of cranberry juice concentrate daily for six months, a yogurt-like drink for 12 months, or no supplementation. The juice consisted of 5.7 grams of cranberry concentrate, 1.7 grams of lingonberry concentrate in one and a half cups of water, with no added sugars.

Kontiokari assessed the effectiveness of the treatments based on the first occurrence of an UTI after the women started to consume the juice or probiotic drink. At six months, only 16 percent of the women consuming the cranberry juice concentrate developed UTIs, compared with 39 percent in the probiotic group and 36 percent in the control group.

The researchers noted that women consuming cranberry juice concentrate had a 20 percent reduction in “absolute risk.” However, those drinking the juice developed half of the incidence of UTIs compared with the control group.

Reference: Kontiokari T, Sundqvist K, Nuutinen M, et al. Randomised trial of cranberry-lingonberry juice and Lactobacillus GG drink for the prevent of urinary tract infections in women. *British Medical Journal*, 2001;322:1-5. □

Ginkgo Biloba Extracts Turn on Genes that Enhance, Protect Brain

While some research supports the use of *Ginkgo biloba* in the treatment of memory problems and Alzheimer's disease, many physicians have expressed skepticism because of a poor understanding of how the herb might work. Now, in a remarkably detailed study, a team of international researchers have identified specific changes in gene behavior in response to ginkgo.

Peter G. Schultz, PhD, of the Scripps Research Institute, La Jolla, Calif., and his colleagues gave a standardized ginkgo extract to laboratory mice, then compared their responses to mice that did not receive ginkgo.

Schulz and his fellow researchers found that the activity of 10 key genes affecting brain function increased by three to 16 times after the mice consumed ginkgo extract. One of the genes influenced the hippocampus, the brain's center of learning and memory. The other nine genes affected the cerebral cortex, which controls memory, speech, logical and emotional responses, and voluntary physical movements.

All of the genes play roles in normal brain

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Quick Reviews of Recent Research

• Researchers link three free radical diseases

If free radicals are involved in the development of many diseases, clustering of at least some of these diseases should occur. In a study of more than 60,000 middle-age nurses, researchers found that the risk of cataracts was increased among women with diabetes, which is characterized by general free-radical stress. In addition, cataracts were strongly associated with and were predictive of eventual death from heart disease, another disease associated with elevated free radicals and low antioxidants.

Hu FB, et al. *American Journal of Epidemiology*, 2001;153:875-881.

• St. John's wort has an antioxidant effect

Researchers measured the antioxidant properties of St. John's wort with human vascular cells and a cell-free medium. In both instances, small amounts of St. John's wort had clear antioxidant properties. At a very large dose, the herb had a prooxidant effect. However, the researchers noted, "it is doubtful that a normal dose of St. John's wort could reach this level in humans due to its dilution in the bloodstream."

Hunt EJ, et al. *Life Sciences*, 2001;69:181-190.

• Carnosine may improve cataracts

Russian researchers used topical drops of N-acetylcarnosine to treat 49 elderly subjects with cataracts. Over six months and two years, nearly all of the subjects benefited from improvements in visual clarity, sensitivity to glare, and light transmission through the lens. (N-acetylcarnosine is not available as a standalone dietary supplement, but may be ordered through a compounding pharmacy. – Editor)

Babizhayev MA, et al. *Peptides*, 2001;22:979-994.

• Pycnogenol® might help patients with retinopathy

Retinopathy may involve either clots or blood leakage in the retina of the eye, and people with diabetes and cardiovascular diseases are at an elevated risk of this disease. In a placebo-controlled study of 40 retinopathy patients, all of those receiving Pycnogenol® had improvements in visual acuity,

with almost one-half having a "good" or "very good" response. Retinopathies in patients given placebos worsened during the study.

Spadea L, et al. *Phytotherapy Research*, 2001;15:219-223.

• Supplements show promise in fibromyalgia

In an open study, researchers gave 13 patients supplements containing cetyl myristoleate, sea cucumber, and shark cartilage. Three patients withdrew from the study, two of them because of side effects (indigestion and muscle spasms). Five of the remaining 10 patients responded to the supplements. The greatest benefits occurred in patients with the most pain and cognitive impairments.

Edwards AM. *Journal of Nutritional & Environmental Medicine*, 2001;11:105-111.

• Vitamin E helps normalize heart rate

Researchers gave 600 IU of vitamin E or a placebo daily to 50 patients with adult-onset diabetes and cardiac autonomic neuropathy, the latter a condition characterized by a variable and erratic heart rate. After four weeks, patients taking vitamin E benefited from improvements in heart rate variability, as well as lower blood levels of insulin and glycohemoglobin. The lower insulin levels indicated a more efficient utilization of glucose, and the lower glycohemoglobin indicated better control of glucose.

Manzella D, et al. *American Journal of Clinical Nutrition*, 2001;73:1052-1057.

• Trans fatty acids boost heart disease risk

In a study of 29 healthy men and women, researchers found that replacing saturated fats with trans fats (found in margarine, vegetable shortening, and partially hydrogenated vegetable oils) decreased the "good" HDL cholesterol by 21 percent and reduced forearm blood flow by 29 percent, both of which increase the risk of heart disease.

de Roos NM, et al. *Arteriosclerosis, Thrombosis and Vascular Biology*;2001;21:1233-1237.

Ginkgo Protects Brain Cells...

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activities and protecting brain cells from damage. For example, ginkgo significantly increased the activity of genes coding for transthyretin, AMPA-2 channel, neuronal tyrosine/threonine phosphatase 1, all of which have neuroprotective functions.

Reference: Watanabe CMH, Wolffram S, Ader P, et al. The in vivo neuromodulatory effects of the herbal medicine *Ginkgo biloba*. *Proceedings of the National Academy of Sciences*, 2001;98:6577-6580. □

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