



EDITOR'S NOTES:

In Defense of Supplementation

In the March/April issue of *Nutrition Alert*, I discussed three studies published in the December 16th issue of the *Annals of Internal Medicine* (AIM). Those studies concluded that taking supplements had little or no effect on lowering the risk for cardiovascular disease and cancer, cognition decline in men, or death and cardiovascular events in people who had already suffered a heart attack. I argued that these studies were not justification for tossing your supplement, as one editorial in the same journal concludes. Apparently, I was not alone.

In the June issue of that same journal, a wealth of well-respected researchers (from Tufts University, Harvard School of Public Health, the Linus Pauling Institute at Oregon State University, the University of Pittsburgh, and more) responded to the statement in the December issue of *AIM* strongly disagreeing that the case on supplements is closed and that "...supplementing the diet of well-nourished adults with mineral and vitamin supplements has no clear benefits and might even be harmful."

In their rebuttal, the researchers remind us that most Americans do not meet even minimum standards of a balanced diet. More than 93%, 61%, and about 50% of adults in the U.S. do not get the Estimated Average Requirement for vitamins D and E, magnesium, and vitamin A and calcium, respectively. In addition, 98% and 71% do not meet the Adequate Intake level for potassium and vitamin K, respectively. Those percentages are even higher for certain subpopulations, including seniors, African Americans, and obese people. A moderate-dose, broad-range multiple vitamin and mineral fills in the gaps effectively, safely, and at a low cost. As the researchers remind us, "a high-quality multi vitamin and mineral supplement costs as little as 3 cents a day, and long-term use is not associated with any adverse health effects."

A multi is primarily meant to supplement (not substitute for) a good diet. But there also is evidence that it might help decrease the risk for certain chronic diseases. As the researchers point out, the largest and longest trial on supplementation is the Physicians' Health Study II at Harvard, which followed almost 15,000 men for 13 years and found a statistically significant 8% reduction in total cancer incidence and up to a 13% reduction in cataracts. These findings are consistent with a wealth of other research spanning decades. If the statement that no one needs supplements was accurate, then every ophthalmologist who prescribes antioxidant supplements with lutein to treat cataracts and macular degeneration and every obstetrician who prescribes prenatal vitamins to prevent spina bifida and other birth defects is misinformed. Yet, these reasons to supplement are completely justified and backed by a large body of respected research.

Supplement use has increased in the past few decades. Supplement users can rest assured they are doing the right thing for their health, as long as they follow some basic, commonsense guidelines: 1) Choose a multi that contains about 100% of the Daily Value for a broad range of nutrients, 2) compliment that multi with a calcium-magnesium in as close to a 2:1 ratio as possible, 3) take extra vitamin D if the multi doesn't contain at least the Daily Value, if not more, for vitamin D, and 4) take an omega-3 DHA supplement if you don't eat fatty fish at least twice a week. Other nutrients, such as lutein and zeaxanthin, are needed if you don't eat dark greens daily.

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(For more information, see *Nature* 2014; 510, June 26, pages 462-464.)



Elizabeth Somer

Vitamin C and Emphysema

Vitamin C supplementation might help prevent emphysema in chronic smokers, according to a study on animals from the University of Calcutta in India. Guinea pigs were exposed to cigarette smoke or were injected with p-benzoquinone, a compound generated by tobacco smoke suspected to be an underlying cause of lung tissue damage associated with emphysema. Some of the animals also were supplemented with vitamin C. Results showed that exposure to cigarette smoke or p-benzoquinone treatment caused progressive accumulation of that compound in the lungs with subsequent deterioration of alveolar cells and emphysema. Vitamin C, in doses of 30 milligrams/kg body weight/day prevented accumulation of p-benzoquinone in the lungs and halted the onset of emphysema. The researchers conclude that, "...a moderately high dose of vitamin C may be a simple preventive therapy for emphysema in chronic smokers."

Ghosh A, Ganguly S, Dey N, et al: Causation of cigarette smoke-induced emphysema by p-benzoquinone and its prevention by vitamin C. American Journal of Respiratory Cell and Molecular Biology 2014;July 24th.

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The ALS Seafood Diet

A diet rich in omega-3 fats lowers the risk for developing amyotrophic lateral sclerosis (ALS) or Lou Gehrig's disease, say researchers at Harvard School of Public Health. A longitudinal analysis of 1,002,082 men and women compared ALS risk to dietary intakes. A total of 995 ALS cases were documented during the follow-up. Those people who included more omega-3s in their diets had a lower risk for ALS. In fact, those who ranked in the top 20% in terms of omega-3 intake cut their odds of developing ALS by a third compared to those in the bottom 20%. All three omega-3s, including DHA, EPA, and ALA, contributed to the lower risk. Intakes of other fats, such as the omega-6 fats in corn or safflower oil, were not associated with a lower risk for developing ALS.

In a second study from Harvard School of Public Health, fiber intake was not found to be a factor in ALS risk. Vegetarians and vegans have much lower blood levels of the two most important omega-3s, DHA and

EPA. A study from the University of San Diego found that supplementing their diets with a vegetarian, algal-based omega-3 containing 254 milligrams DHA plus EPA for four months significantly improved circulating omega-3 levels.

IN PERSPECTIVE: *Inflammation and oxidative stress are linked with ALS, which might explain at least one of the ways these healthy fats lower ALS risk. Also, it is important to note that this study did not look at whether or not omega-3s affected patients already burdened with the disease. Whether high intakes could help treat people with ALS isn't known.*

Fitzgerald K, O'Reilly E, Falcone G, et al: Dietary omega-3 polyunsaturated fatty acid intake and risk for amyotrophic lateral sclerosis. JAMA Neurology 2014; July 14th.

Fondell E, O'Reilly E, Fitzgerald K, et al: Dietary fiber and amyotrophic lateral sclerosis. American Journal of Epidemiology 2014; 179:1442-1449.

Sarter B, Kelsey K, Schwartz T, et al: Blood docosahexaenoic acid and eicosapentaenoic acid in vegans. Clinical Nutrition 2014; March 14th.

Fish Oil Saves Memory

In the first of its kind, a study from Brown University in Providence, Rhode Island concludes that fish oil supplementation improves memory throughout the spectrum of normal aging and neurogeneration in older adults. Older adults (229 cognitively normal, 397 with mild cognitive impairment, and 193 with Alzheimer's disease) were assessed at baseline and every six months and were followed for cognitive abilities and cerebral cortex and hippocampal (the memory center of the brain) volumes. The group consisted of 117 seniors who took fish oil supplements at the start and throughout the study, and 682 seniors who did not. Those that started

taking fish oil supplements during the study were eliminated from the final analysis. Results showed that fish oil supplementation was associated with less cerebral cortex and hippocampal atrophy, as well as better performance on tests for cognitive function in all the groups compared to those who did not supplement.

IN PERSPECTIVE: *While dosages were not discussed in this article, previous studies show that between 220mg and 900mg of the omega-3 fat DHA are associated with improved cognitive function.*

Daiello L, Gongvatana A, Dunsiger S, et al: Association of fish oil supplement use with preservation of brain volume and cognitive function. Alzheimer's & Dementia 2014; June 18th.

HOTTOPICS: Low blood and hair levels of calcium, magnesium, and potassium and high levels of sodium are associated with an increased risk for hypertension, according to a study from the University of Sindh, Pakistan. *Clinical Laboratory 2014;60:463-474.*

High blood levels of folic acid were associated with a lower risk for glaucoma in a group of 31,2010 women, suggesting that homocysteine may play a damaging role in this disease, state researchers at Brigham & Women's Hospital in Boston. *JAMA Ophthalmology 2014;132:549-559.*

Make Your Dentist Proud

Supplementing with the omega-3 DHA lowers periodontitis risk, according to a study from Harvard Medical School. In this double-blind, placebo-controlled study, 55 adults with moderate periodontitis were randomized to either 2,000 milligrams of DHA or placebos. All patients received 81 milligrams of aspirin. After 3 months, blood levels of DHA had almost doubled in the supplemented group and the gingival pocket depth in these subjects had significantly decreased, while the placebo group showed no improvements.

IN PERSPECTIVE: *Periodontitis is a chronic disorder caused by bacteria at the gum line that causes gingival separation from the tooth and systemic inflammation. Traditional therapies have addressed the bacterial infection, but this study focused on strengthening the person's defense against that infection.*

Naqvi A, Hasturk H, Mu L, et al: Docosahexaenoic acid and periodontitis in adults. Journal of Dental Research 2014;93:767-773.

The Popeye Supplement Plan

Iron supplementation improves athletic performance in reproductive-age women, according to a meta-analysis conducted by researchers at the University of Melbourne, Australia. The pooling of data from 22 studies showed that iron supplementation improved both maximal exercise performance (demonstrated by an increase in maximal oxygen consumption) and submaximal exercise performance (demonstrated by a lower heart rate during exercise). The researchers conclude that, "Daily iron supplementation significantly improves maximal and submaximal exercise performance in women of reproductive age, providing a rationale to prevent and treat iron deficiency in this group."

Pasricha S, Low M, Thompson J, et al: Iron supplementation benefits physical performance in women of reproductive age. Journal of Nutrition 2014;144:906-914.



Vitamin D: A Marker for Life Expectancy?

High levels of vitamin D might protect people from an early death, according to an analysis of research from the German Cancer Research Center in Heidelberg, Germany. Researchers examined 8 studies that together tracked more than 26,000 nonsmoking men and women between the ages of 50- and 79-years-old. About 6,700 of these people died during the time period of the studies, mostly from heart disease and cancer. Results showed that people with the lowest vitamin D levels were 1.5-times more likely than those with the highest levels to die from any cause, especially heart disease. Those with low levels of vitamin D and a history of cancer were 1.7-times more likely to die from the disease. People with no history of cancer did not show any effects from vitamin D status on risk of cancer death. It is unclear how this vitamin prolongs life, but the researchers speculate it might have something to do with the vitamin's hormone capabilities.

Low vitamin D levels may contribute to an increased risk for high blood pressure, state researchers at the University of South Australia.

Schottker B, Jorde R, Peasey A, et al: Vitamin D and mortality: Meta-analysis of individual participant data from a large consortium of cohort studies from Europe and the United States. British Medical Journal 2014;348:June 17th.

Vimalaswaran K, Cavadino A, Berry D, et al: Association of vitamin D status with arterial blood pressure and hypertension risk. Lancet: Diabetes & Endocrinology 2014; June 25th.

Vitamin D and Prostate Cancer

Numerous studies show that low vitamin D levels increase prostate cancer risk, while optimal vitamin D status lowers risk. In a study from the University of Illinois at Chicago, vitamin D deficiency in a group of 667 men ages 40- to 79-years was associated with an increased risk for aggressive, advanced prostate cancer. A report from Sunlight, Nutrition and Health Research Center in San Francisco states that vitamin D deficiency is associated with increased risk of prostate cancer for those with elevated prostate-specific antigen (PSA) levels, and also is linked to a higher risk for aggressive prostate cancer. Finally, researchers at the Fred

Hutchinson Cancer Research Center in Seattle warn that while low vitamin D status is linked to an increased risk for prostate cancer, excessive vitamin D intake also might raise risk. This suggests there is a window of vitamin D intake that is protective, but supplementing someone who already is optimally nourished is not recommended.

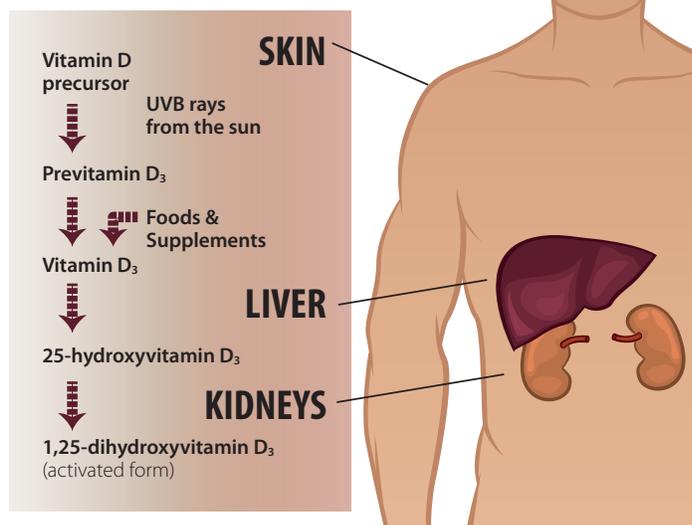
Murphy A, Nyame Y, Martin I, et al: Vitamin D deficiency predicts prostate biopsy outcomes. Clinical Cancer Research 2014;20:2289-2299.

Grant W: Vitamin D status: Ready for guiding prostate cancer diagnosis and treatment? Clinical Cancer Research 2014;20:2241-2243.

Kristal A, Till C, Song X, et al: Plasma vitamin D and prostate cancer risk. Cancer Epidemiology, Biomarkers & Prevention 2014; April 14th.

How the body makes vitamin D

Vitamin D can be made in the body when sunlight prompts a cholesterol-like compound in the skin to convert to a pre-vitamin D that then is further converted in the liver and then the kidneys. UV rays from the sun are too weak to make this conversion in the winter, so make sure you supplement!



The Eyes Have It for Alzheimer's

The same foods that help protect your eyes from cataracts and macular degeneration also could protect your brain from Alzheimer's disease, according to a study from the Waterford Institute of Technology in Ireland and the University of Cambridge, U.K. The researchers compared macular pigment and cognitive function in a group of 36 patients with moderate Alzheimer's and in 33 healthy controls. Blood levels of lutein and zeaxanthin (carotenoids typically found in dark green leafy vegetables) also were compared to macular degeneration

status. Results showed that the Alzheimer's group had significantly lower levels of macular pigment and blood levels of lutein and zeaxanthin compared to controls. The researchers state that studies now should investigate the impact of macular carotenoid supplementation with respect to macular pigment, visual function, and cognitive function.

IN PERSPECTIVE: Lutein and zeaxanthin are the only carotenoids that cross both the blood-brain barrier and the brain-retina barrier. They are concentrated

in ocular tissue and are known to help filter blue light as well as serve as antioxidants in the prevention of both cataracts and macular degeneration, the two leading causes of vision loss. This study is one in an increasing number of recent reports that show these two carotenoids also might play a protective role in the prevention of dementia, such as Alzheimer's.

Nolan J, Loskutova E, Howard A, et al: Macular pigment, visual function, and macular disease among subjects with Alzheimer's disease. Journal of Alzheimer's Disease 2014;July 2nd.



Fat News

Everyone already knows that being sedentary and overweight is just bad, bad, bad. Here's the latest news on how that extra blubber undermines health and longevity.

- According to the Centers for Disease Control and Prevention (CDC), more than 29 million Americans have type 2 diabetes, up from previous estimates of 26 million in 2010. One in four of those people don't know they have the disease. Another 86 million adults - more than one in three - have prediabetes. Almost all of these people are at risk because they are overweight.
- The American Heart Association states that adults who watch TV for three hours or more each day double their risk for premature death compared to people who are more active.
- Researchers at Stanford University state that lack of exercise is the main reason why an increasing number of Americans are obese, citing that the number of women who reported no exercise rose from 19% in 1994 to 52% in 2010 and inactive men increased in that same time period from 11% to 43%.
- Researchers at the National Cancer Institute report that people who are severely obese lose up to 14 years off their lives, with death rates 2.5-times higher than in healthy-weight adults. Most of the excess death is from heart disease, cancer, and diabetes.
- Finally, researchers at Albert Einstein College of Medicine in New York report that obesity is a serious growing problem among Hispanic Americans with 18% of women and 12% of men being obese and a growing number of young adults having BMI's greater than 40, placing them in the severe obese category.

Basterra-Gortari F, Bes-Rastrollo M, Gea A, et al: Television viewing, computer use, time driving and all-cause mortality. Journal of the American Heart Association 2014;June 25th.

Ladabaum U, Mannalithara A, Myer P, et al: Obesity, abdominal obesity, physical activity, and caloric intake in U.S. adults: 1988-2010. American Journal of Medicine 2014;March 10th.

Kaplan R, Aviles-Santa M, Parrinello C, et al: Body mass index, sex, and cardiovascular disease risk factors among Hispanic/Latino adults. Journal of the American Heart Association 2014;July 9th.

Kitahara C, Flint A, Berrington de Gonzalez A, et al: Association between Class III obesity (BMI of 40-59 kg/m²) and mortality. PLoS Med 2014;July 8th.



Waist Not

A simple alternative to the BMI is to check your waist circumference. A woman's waist should be < 35 inches and a man's < 40 inches. If you have other risk factors, such as elevated triglycerides or blood pressure, aim for an even smaller waistline. If your waist has increased more than 2 inches, that is an early warning signal that you are above a healthy weight for you.

How to measure your waist circumference:

Place a tape measure snugly around your bare abdomen just about your hip bone. Exhale. Then take the measurement.

Source: National Institutes of Health

Meat Eaters Beware

In a study from the National Cancer Center in the Republic of Korea, researchers found that red meat consumption increased cancer risk. Lifestyle questionnaires and dietary recalls were completed on 8,024 people who had participated in a cancer screening examination. During the next five to nine years, 387 of those people developed cancer. Results showed that those people who scored highest on intakes of red meat and/or sodium or who were overweight had the highest risk for developing cancer, especially gastric and thyroid cancers. People who had all three risk factors and who consumed few fruits and vegetables had a 26% higher risk for cancer than people who had fewer of these risk factors.

Women who eat red meat increase their risk for breast cancer by almost 25%, while replacing red meat with fish, legumes, nuts, and lean poultry lowers risk by 14%, according to a 20-year study from Harvard School of Public Health.

Compared with people who eat none, those people who frequently include processed red meats in their diets shorten their lives by at least 9 months. Moderate to high consumption of unprocessed red meat also was associated with shorter lives, according to a study from the Karolinska Institute in Stockholm, Sweden.

Men who regularly eat processed red meats, such as ham, salami, hot dogs, and luncheon meats, raise their risk for heart failure by 28%, state researchers at Warsaw University of Life Sciences in Sweden.

Wie G, Cho Y, Kang H, et al: Red meat consumption is associated with an increased overall cancer risk. British Journal of Nutrition 2014;112:238-247.

Farvid M, Cho E, Chen W, et al: Dietary protein sources in early adulthood and breast cancer incidence. British Medical Journal 2014;June 10th.

Kaluza J, Akesson A, Wolk A: Processed and unprocessed red meat consumption and risk of heart failure. Circulation: Heart Failure 2014; 7:552-557.

HOTTOPIC: Staying fully hydrated improves both cognition and mood, according to a review of the research from the University of Reading, U.K. *British Journal of Nutrition* 2014;111:1841-1852.

HOTTOPIC: The phytochemicals, including polyphenols and flavonoids, in greenhouse-grown herbs, such as oregano and rosemary, help to reduce blood sugar

as effectively as anti-diabetic drugs, according to researchers at the University of Illinois at Urbana-Champaign. *Journal of Agriculture & Food Chemistry* 2014;June 13th.



High-Fat Sniffer Malfunction

A high-fat diet could cause you to lose your sense of smell, according to a study from the Florida State University. Researchers induced obesity in mice by feeding them high-fat diets for six months. As a result, the mice lost significant function in their olfactory nerves. They also learned reward-reinforced behaviors more slowly, had deficits in reversal learning, demonstrated behavioral inflexibility, and showed reduced ability to discriminate between smells. When removed from the high-fat diets, the mice regained their normal body weight, but the olfactory dysfunction remained. In fact, the mice were left with only 50% of the neurons that operate to encode odor signals. The researchers conclude that excessive calorie intake from fat leads to long-term structural and functional changes in the olfactory system, which gives animals and humans a sense of smell, as well as significant changes in reward-driven behaviors.

IN PERSPECTIVE: This is the first study to show a link between excess body fat and reduced ability to smell and opens up a whole new world of possibilities on how obesity affects bodily functions not previously considered when studying the impact of weight gain on health.

Thiebaud N, Johnson M, Butler J, et al: Hyperlipidemic diet causes loss of olfactory sensory neurons, reduces olfactory discrimination, and disrupts odor-reversal learning. Journal of Neuroscience 2014;34:6970-6984.

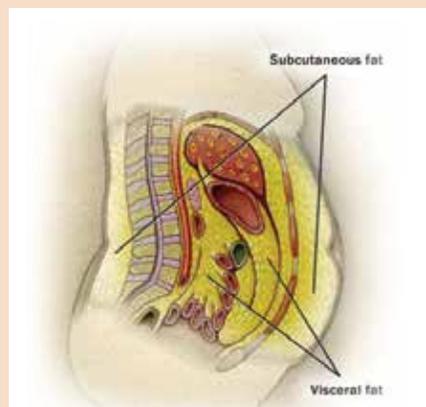
HOT TOPICS: Supplements of lutein, zeaxanthin, and meso-zeaxanthin improved macular pigment and visual function in a group of patients with early age-related macular degeneration, according to a study from the Dublin Institute of Technology in Ireland. *Retina 2014;May 30th.*

Vitamin C supplementation might help reduce the oxidative damage and endothelial dysfunction caused by high blood levels of homocysteine, according to a study from Adnan Mederes University in Turkey. *Experimental and Technological Pathology 2014;July 16th.*

Too Young to Be So Old

A huge percentage of overweight children have symptoms of adult-onset disease, such as fatty liver and elevated visceral fat, according to a study from the University of Manitoba. Researchers investigated the roles of sugar and fat intake in overweight teenagers (14- to 16-years-old) on the incidence of fatty liver (hepatic steatosis) and visceral obesity (fat accumulation around organs associated with heart disease, diabetes, cancer, hypertension, and the metabolic syndrome). Results showed that 43% of the teens had fatty liver and 44% had excessive visceral fat. Fried food consumption was more common in teens with fatty liver. Teens who consumed more than 35% of calories as fat were the most prone to fatty liver. Refined carbohydrate and frequent consumption of soda was positively linked with visceral fat accumulation.

IN PERSPECTIVE: Previous research shows that fructose, especially high-fructose corn syrup, is more likely than other calories to aim for deep belly fat, or visceral fat. Fructose appears to



Not All Fat is Equal

People who have more visceral fat, which lies deep within the abdomen, are more likely to have stiffer arteries.

raise levels of liver and muscle fat, and increase the risk for insulin resistance, which is a stepping stone to diabetes. In one study, liver and muscle fat doubled in those people who drank the most fructose-sweetened beverages.

Mollard R, Senechal M, MacIntosh A, et al: Dietary determinants of hepatic steatosis and visceral adiposity in overweight and obese youth at risk of type 2 diabetes. American Journal of Clinical Nutrition 2014;99:804-812.

Was Dr. Oz Right?

Dr. Oz was grilled on Capital Hill for promoting a questionable weight loss supplement called garcinia cambogia. However, a handful of small studies, including one from InQpharm Europe Ltd in the U.K., published in obscure journals conclude that this extract might have some merit for weight loss. More than 90 overweight adults were given either placebos or a combination supplement that contained several extracts, including garcinia cambogia, camellia sinensis, and unroasted coffea arabica, for 14 weeks while following diets that had cut calories by 500 calories a day. Results showed a 2.26kg weight loss in the supplemented group compared to only a 0.56kg weight loss in the placebo group. There also was a greater loss of body fat mass, waist circumference, and hip circum-

ference in the supplemented group.

IN PERSPECTIVE: The 5 pound weight loss during a 14 week study is not a miraculous effect, since cutting 500 calories a day for that length of time should result in more than twice that level of weight loss. It is more likely that both groups ate more than they reported, with the placebo group fudging the numbers more than the supplemented group. In addition, previous research found that garcinia cambogia might increase liver damage, inflammation, and oxidative stress. *Chong P, Beah Z, Grube B, et al: IQP-GC-101 reduces body weight and body fat mass. Phytotherapy Research 2014;May 2nd.*

Kim Y, Choi M, park Y, et al: Garcinia cambogia attenuates diet-induced adiposity but exacerbates hepatic collagen accumulation and inflammation. World Journal of Gastroenterology 2013;19:4689-4701.



IN THE NEWS

- Seniors who eat right, exercise, play “brain games,” and socialize perform better on memory and problem-solving tests compared to seniors who don’t follow these healthy habits, according to a study reported at the Alzheimer’s Association International Conference in Copenhagen, Denmark.
- Supplementing with 10 milligrams of lutein and 2 milligrams of zeaxanthin significantly increased macular pigment optical density and lowered oxidative damage in eye tissue, thus potentially lowering the risk for later development of macular degeneration in a study presented at the International Carotenoids Society Meeting in Utah.
- Daily exercise and a diet that regularly includes fatty seafood, such as salmon, helps lower the odds of relapse in colon cancer patients, according to a study reported at the American Society of Clinical Oncology in Chicago.
- The U.S. Food and Drug Administration (FDA) released a warning that weight loss products that contain bee pollen could be dangerous, including an increased risk for cardiac issues, chest pain, heart palpitations, tachycardia, increased blood pressure, seizures, insomnia, diarrhea, and even death.
- An international committee has voiced concerns about inorganic arsenic in rice, which is a known carcinogen with no recognized safe level. They recommend avoidance of all rice drinks for infants and young children and enforcement of strict regulations on all rice products regarding arsenic content. (*Journal of Pediatric Gastroenterology and Nutrition* 2014; July 11th.)
- According to a CDC report, up to 34% of obese and 81% of overweight children and teens think they are at, or close to, their ideal body weight.

Under Pressure with Probiotics

Including probiotics in your daily routine could help lower blood pressure, according to a study from Griffith University in Queensland, Australia. In this review, researchers found that probiotic consumption lowered systolic blood pressure by an average of 3.56mmHg and diastolic blood pressure by an average of 2.39mmHg. These effects were greatest in people whose blood pressures were equal to or greater than 130/85 and were noted only when people took probiotic supplements or foods for at least eight weeks. In addition, daily bacteria volume intake needed to be at least 109 colony-forming units (CFU) and probiotics with multiple bacteria were more effective than single bacteria in lowering blood pressure.

Splenda to the Rescue

Artificial sweeteners have gotten a bad rap of late. Rumor has it that they increase appetite, weight, or worse yet, disease risk. While most of this research is unfounded, a study from the Agricultural University of Athens in Greece reports that one artificial sweetener, Splenda, might actually help with control of diabetes. Researchers compared blood sugar, insulin, and c-peptide responses (which gauge how much insulin the body is producing) in people with type 2 diabetes after eating desserts made with sucralose (the no-calorie sweetener in Splenda) and dextrin (a soluble fiber) to the same responses in those people after eating the desserts made with sugar. Results showed that the diabetics who ate desserts made with Splenda had lower after-meal glucose and insulin levels compared to after they ate the same desserts made with sugar. The researchers conclude that, “...[this] study supports the wide body of research that confirms sucralose does not increase blood sugar or insulin level... and can be a great tool in diabetes meal planning.”

Argyri K, Sotiropoulos A, Psarou E, et al: Dessert formulation using sucralose and dextrin affects favorably postprandial response to glucose, insulin, and c-peptide in type 2 diabetic patients. Review of Diabetes Research 2013;10:39-48.

Researchers at the University of Granada report that probiotics lowered the accumulation of fat in the liver of obese rats when consumed daily for at least 30 days. *Khalesi S, Sun J, Buys N, et al: Effect of probiotics on blood pressure. Hypertension 2014;DOI:10.1161/HYPERTENSIONAHA.114.03469*

Plaza-Diaz J, Gomez-Llorente C, Abadia-Molina F, et al: Effects of Lactobacillus paracasei CNCM I-4034, Bifidobacterium breve CNCM I-4035 and Lactobacillus rhamnosus CNCM I-4036 on Hepatic Steatosis in Zucker Rats. PLoS ONE, 2014; 9 (5): e98401 DOI: 10.1371/journal.pone.0098401

Avocado Up!

Add an avocado to a salad and your body will thank you many times over. In two studies, researchers at Hohenheim University in Stuttgart, Germany studied the effects of adding avocado to the meals of 12 healthy men and women to see how it affected carotenoid absorption, in particular, beta carotene and alpha carotene. One meal was served with avocado and a second meal without avocado. Blood samples were taken over 12 hours to assess the level of carotenoids. In the first study, which used tomato sauce as a source of carotenoids, avocado inclusion in the meal more than doubled beta carotene absorption and more than quadrupled the conversion of beta carotene to the active form of vitamin A. In the second study, which used raw carrots as a source of carotenoids, avocado increased beta carotene absorption 6.6-fold, quadrupled alpha carotene absorption, and increased the conversion of beta carotene to the active vitamin A 12.6-fold.

IN PERSPECTIVE: *Paring foods is more than just about taste. Some food combinations help with absorption and utilization of nutrients. This study is an example of how important it is to pair a small amount of healthy fat (in this case, monounsaturates from avocado) with fat-free, nutrient-packed produce, such as tomatoes, carrots, watermelon, and other fruits and vegetables.*

Kopec R, Cooperstone J, Schweiggert R, et al: Avocado consumption enhances human postprandial provitamin A absorption and conversion from a novel high-beta-carotene tomato sauce and from carrots. Journal of Nutrition 2014;144:1158-1166.



HOT TOPICS

1 Iron supplementation during infancy results in greater adaptive behavior by age 10-years-old, which would improve school performance and work, mental health, and personal relationships, state researchers at the University of Michigan. *Journal of Nutrition* 2014;144:838-845.

2 Olive leaf extract is a potent antioxidant rich in polyphenols that helps lower oxidative stress, according to a study from Yeditepe University Medical Faculty in Istanbul, Turkey. *Geriatrics & Gerontology International* 2014;May 23rd.

3 Adults who consume diets with a high glycemic index and/or high glycemic load have up to a 50% increased risk for developing type 2 diabetes, state researchers at Harvard School of Public Health. *American Journal of Clinical Nutrition* 2014;April 30th.

4 In the past 3 decades, the number of overweight and obese people worldwide has increased from 857 million to 2.1 billion. The U.S. is home to the highest proportion of the world's obese people, at 13%, and peak obesity rates are occurring at younger ages, state researchers at the Institute for Health Metrics and Evaluation at the University of Washington in Seattle. *Lancet* 2014;May 29th.

5 Postmenopausal women consume diets that are low in calcium, magnesium, potassium, selenium, folate, niacin, and vitamins D, E, and B6, state researchers at Tehran University of Medical Sciences. *Journal of Diabetes and Metabolic Disorders* 2014;April 25th.

6 People who consume sweetened beverages like soft drinks, bottled teas, and energy drinks, are at higher risk for stroke, according to a study from the Karolinska Institute in Stockholm. *Journal of Nutrition* 2014;144:856-860.

7 A combined supplement of resveratrol and piperine increased cerebral blood flow during mental task examinations in a study from Northumbria University in the U.K. *British Journal of Nutrition* 2014;112:203-213.

8 In a review of 343 studies, researchers at Washington State University found that organic crops had 17% higher antioxidant levels, including flavanones, flavonols and anthocyanins; less pesticide residues; and lower levels of the toxic metal cadmium compared to conventional produce. *British Journal of Nutrition* 2014;July 14th.

9 In a study from the University of Copenhagen where people were given sugar-sweetened beverages or beverages sweetened with sugar substitutes, only the sugar-sweetened beverage group gained weight. *American Journal of Clinical Nutrition* 2014;100:36-45.

10 When a woman is depressed, she turns to highly processed, energy-dense snack foods, while a man turns to the same foods when he's feeling good, according to a study from the National Institute of Health and Medical Research in Paris. *Journal of Nutrition* 2014;144:1264-1273.

11 According to a study from Sapienza University in Rome, the antioxidants in dark chocolate (including the polyphenols) might help people suffering from reduced blood flow to the legs (i.e., peripheral artery disease caused by a narrowing of the arteries that carry blood from the heart to the legs.) *Journal of the American Heart Association* 2014;July 2nd.

12 Patients with Alzheimer's disease have elevated blood levels of homocysteine, but taking B vitamins, which are known to lower this compound, did not slow the progression of the disease in a study from Oxford University in England. *American Journal of Clinical Nutrition* 2014;June 25th.

13 More than half of diners use calorie information on menus if it is provided, state researchers at the Centers for Disease Control and Prevention. *Morbidity and Mortality Weekly Report* 2014;July 11th.

14 The omega-3s in fish oil increase nitric oxide and decrease oxidation in the cells lining the blood vessels, thus reducing damage to this tissue and possibly lowering atherosclerotic risk, according to a study on mice at Sun Yat-sen University in the People's Republic of China. DHA-fortified canola oil increases HDL-cholesterol, and lowers triglycerides and blood pressure, state researchers at the University of Manitoba. *British Journal of Nutrition* 2014;112:145-153/*American Journal of Clinical Nutrition* 2014;100:88-97.

15 People diagnosed with colon cancer live longer when they consume a diet rich in milk products, according to a study from the American Cancer Society's epidemiology research program. However, these people also are leaner, more physically active, eat less red meat, and include more fruits and vegetables in their diet, so is it the milk or the lifestyle? *Journal of Clinical Oncology* 2014;June 23rd.

16 People who consume nuts two or more times a week have a 56% lower risk for all-cause mortality compared to those who seldom or never eat nuts, report researchers at the University of Navarra in Spain. *Nutrition* 2014;March 12th.

17 People who include yogurt in their daily diet have a lower risk for being overweight or obese, state researchers at the University of Navarra in Spain. *Nutrition, Metabolism & Cardiovascular Disease* 2014;June 15th.

18 Dropping a few pounds helps curb hot flashes in menopausal women, according to a study from the University of Pittsburgh School of Medicine. *Menopause* 2014;June 23rd.

19 Low vitamin D status raises the risk for schizophrenia, according to studies from Isfahan University of Medical Sciences in Iran and Columbia University Medical Center in New York. *Journal of Clinical Endocrinology & Metabolism* 2014;jc.2014-1887/*Schizophrenia Research* 2014;156:15-22.

20 Researchers at Marshall University in West Virginia caution that health professionals should consider vitamin D and calcium supplementation for all seniors to help prevent falls. *West Virginia Medical Journal* 2014;110:10-12.



Put An End to Diabetes

Researchers at Harvard School of Public Health have put the dietary guidelines to prevent diabetes into a simple, no frills nutshell. They conclude that diets rich in 100% whole grains, colorful fruits and vegetables, legumes, and nuts; moderate in alcohol; and low in refined grains, red or processed meats, and sugar-sweetened beverages reduce the risk of diabetes and improve glycemic control and blood lipids in people with diabetes. With an emphasis on overall diet quality, several dietary patterns, including the Mediterranean, low glycemic index, moderately low carbohydrate, and vegetarian diets, can be tailored to personal and cultural food preferences and appropriate calorie needs for weight control and diabetes prevention and management. That's settled. Now the 29 million Americans with diabetes just need to follow that advice.

Ley S, Hamdy O, Mohan V, et al: *Prevention and management of type 2 diabetes. Lancet* 2014;383:1999-2007.

NUTRITION ALERT

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REVIEW

The Skinny on Coconut

A little coconut won't hurt, but don't be fooled by recent diet fads that tout coconut, coconut oil, or coconut water as the secret ingredient for weight loss, sports recovery, and health. Unlike most nuts that contain heart-healthy fats, the main fat in coconut is saturated fat. Granted, the main saturated fat in coconut oil is lauric acid, which is a "medium-chain triglyceride" or MCT. Unlike the longer saturated fats in dairy products and meat, MCTs are shorter, more quickly absorbed, and likely to be burned for energy, rather than stored as fat. Numerous studies show that MCTs increase metabolism, aid in weight loss, and lower body fat. That's the argument to justify drinking coconut-laden smoothies with 93% fat calories.

Like the old adage says, "If it sounds too good to be true, it probably is." There are few studies on coconut and weight loss, mostly ones using purified MCTs, which are useful mainly for hospitalized patients requiring tube feedings. There are only a handful of studies, most on animals, showing any weight loss potential for coconut. In short, if people lose weight with coconut, it's probably because they cut calories, not because they sprinkled coconut on their hamburger.

OK, so coconut isn't the Promised Land for weight loss, but is it good for your health? The proponents of coconut say we've been duped into thinking that the saturated fats in tropical oils are bad for us, pointing out that we've "...drastically reduced saturated fats...[which] has not solved the nation's health problems." They say lauric acid in coconut oil lowers, not raises, heart-disease risk, as proven by the low rates of heart disease in coconut-eating cultures such as India. First, saturated fats, along with trans fats, are major contributors to heart disease, it's just that few people follow the dietary advice to cut back. Second, while cultures where people eat coconut-rich diets sometimes do have a lower incidence of disease, there is no proof it is because of coconut. It could be that these people are at low risk because they are lean, physically active, and eat traditional diets rich in fruits, vegetables, and other real foods. In contrast, adding coconut oil to the fat- and sugar-laden American diet is like pouring kerosene on a blazing fire of obesity.

The evidence linking coconut oil to heart disease is contradictory, but points sharply in the direction of caution. Some studies show lauric acid might improve the ratio of bad cholesterol (LDL) to good cholesterol (HDL), thus lowering heart-disease risk. Even then, coconut oil is no where near as beneficial as switching from butter to olive oil. Keep in mind that coconut oil also contains myristic acid, a fat that dramatically raises blood cholesterol levels. Decades of studies show that tropical oils, including coconut oil, actually raise, not lower, heart disease risk, which is why they were removed from processed foods in the first place. And, if you think coconut water is a great sports recovery drink, think again. Studies show it's no better for replacing electrolytes or fluids than commercial sports drinks. A glass of water and a banana or a bowl of watermelon also can do the trick.

Don't get me wrong. Coconut has redeeming qualities. Virgin coconut oil has some vitamin E and phytochemicals called polyphenols. If you use coconut milk, grab the "light" version, which has 70% less fat and 65% fewer calories. Then use it sparingly.

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