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Fructose and Soft Drink Consumption Linked to Hypertension, Other Diseases

One of the most dangerous food additives might surprise you – fructose, which is found in corn syrup and high-fructose corn syrup. The latest study shows a strong link between fructose consumption and high blood pressure, and it adds to a growing body of research implicating fructose in overweight, diabetes, heart disease, and liver dysfunction.

Most people think of fructose as fruit sugar. While it is found in fruits, most dietary fructose (which is synthesized from corn) now comes from soft drinks, bakery products, sweets, and a variety of other processed food products.

The latest study, by Diana I. Jalal, MD of the University of Colorado Denver Health Sciences Center, analyzed the relationship between fructose consumption and hypertension in 4,528 adults. The subjects' average fructose consumption was 74 grams daily, equivalent to the amount found in two and one-half soft drinks.

People who consumed more than 74 grams of fructose daily had a significantly higher risk of high blood pressure. People who consumed the most fructose had a 77 percent greater risk of very high blood pressure – 160/100 mmHg.

Meanwhile, William Nseir, MD, of Holy Family Hospital, Nazareth, Israel, and his colleagues reviewed the medical evidence linking fructose and soft drinks to fatty liver disease.

Nseir wrote that fructose promotes lipogenesis – fat production – in the liver. The problem is compounded by caramel coloring in colas, which are rich in advanced glycation end products (AGEs – see the July issue of *The Nutrition Reporter*), which in turn increase insulin resistance and inflammation.

Nseir cited other evidence detailing how fructose increases liver concentrations of triglyceride and cholesterol, leading to a reduction in liver function. Fructose consumption is also strongly associated with obesity. Nseir also explained that while fructose does not usually affect glucose tolerance in the short term, large amounts do seem to increase the risk of diabetes and kidney disease.

Finally, a recent animal study by Ronaldo P. Ferraris, PhD, of the New Jersey Medical School, Newark, found that large amounts of dietary fructose inhibit calcium absorption and also leads to vitamin D deficiency, at least in cases of chronic kidney disease.

References: Jalal DI, Smits G, Johnson RJ, et al. Increased fructose associates with elevated blood pressure. *Journal of the American Society of Nephrology*, 2010;21:epub ahead of print. Nseir W, Nassar F, Assy N. Soft drinks consumption and nonalcoholic fatty liver disease. *World Journal of Gastroenterology*, 2010;16:2579-2588. Douard V, Asgerally A, Sabbagh Y, et al. Dietary fructose inhibits intestinal calcium absorption and induces vitamin D insufficiency in CKD. *Journal of the American Society of Nephrology*, 2010;21:261-271. ❑

Perspectives

Mixed Messages for Health Care

Two recent newswire stories caught my attention. One article noted that there will be a significant shortage of doctors as "baby boomers" hit their 60s and 70s. The other story noted that too much health care is unnecessary and harmful.

Am I the only one who saw a contradiction here?

The second story, sent to newspapers by the Associated Press, noted that "More medical care won't necessarily make you healthier—it may make you sicker." The article went on to report that as many as one in three medical tests and treatments aren't needed.

Fewer medical tests might not be a popular idea among people who keep asking their doctors to identify the cause and then to treat their aches and pains and other health problems. But I would agree, at least to an extent – conventional medical tests and treatments are overused, while nutritional assessments and treatments are sorely underutilized.

In the United States, medicine is a "for profit"

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business, and most doctors earn a living through some sort of intervention, such as by prescribing a drug or doing surgery. When a patient asks for help, his expectation is that the doctor will do something. Of course, doctors are trained to intervene, and income is related to ordering more tests and doing more interventions. Sometimes the result is iatrogenic disease – physician-caused illness.

Although I believe most doctors are sincere and do want to help their patients, they also know the economic realities of medicine. But not everyone is so sincere. Some years back, I happened to be meeting with a hospital administrator on the morning the government announced that it was reducing Medicare payments to doctors. The administrator was livid. "Do you know what the doctors are going to do?" she asked rhetorically. "They've got big mortgages and boats and kids in college. They're just going to wheel in more patients so they (the docs) don't have to take a cut in income."

So, do we really need more doctors? Or unnecessary tests and treatments? Or do we need more doctors who think in terms of more efficient and lower cost nutritional therapies? – *JC*

Ample Vitamin E May Help Protect Against Alzheimer's

Two new studies have found that high levels of vitamin E are associated with a lower risk of Alzheimer's disease.

Elizabeth E. Devore, ScD, of the Erasmus Medical Center, Netherlands, and her colleagues investigated dietary and health data in 5,395 men and women age 55 and older. After an average follow up of almost 10 years, 465 of the participants were diagnosed with dementia. Of those, 365 were diagnosed with Alzheimer's disease.

People with the highest dietary intake of vitamin E were one-fourth less likely to develop either Alzheimer's disease or other types of dementia.

In the other study, Francesca Mangialasche, MD, of the Karolinska Institute, Sweden, and her colleagues analyzed the relationship between blood levels of total vitamin E and the eight chemical subfractions of the vitamin and the odds of developing Alzheimer's disease. Mangialasche focused on 232 men and women who were at least 80 years old. Fifty-seven of the subjects were diagnosed with Alzheimer's over the next six years.

High blood levels of total vitamin E were associated with a 45 percent lower risk of Alzheimer's disease. The four tocopherols and four tocotrienols that make up vitamin E also seemed to protect against Alzheimer's, but beta-tocopherol seemed to exert the greatest single benefit.

The human body preferentially selects for the d-alpha tocopherol form of vitamin E, but the other tocopherols and tocotrienols also have antioxidant effects. Mangialasche noted that vitamin E is the body's principal fat-soluble antioxidant, and that it plays an important role in protecting cell membranes. Damage to these membranes may be a factor in Alzheimer's.

"The protective activity of vitamin E seems to be related to the combination of different forms, rather than alpha-tocopherol alone," Mangialasche wrote.

Although most vitamin E is sold in the alpha-tocopherol form, some supplements contain a mix of tocopherols and tocotrienols.

References: Devore EE, Grodstein F, can Rooij FJA, et al. Dietary antioxidants and long-term risk of dementia. *Archives of Neurology*, 2010;67:819-825. Mangialasche F, Kivipelto M, Mecocci P, et al. High plasma levels of vitamin E forms and reduced Alzheimer's disease risk in advanced age. *Journal of Alzheimer's Disease*, 2010;20:1029-1037. ❑

B Vitamins and Methionine May Reduce Risk of Lung Cancer

Men and women with high blood levels of vitamin B6, folic acid, and methionine had roughly half the risk of developing lung cancer, compared with people who had low levels of these nutrients.

Although the study showed an association – not a direct cause and effect – the researchers provided a rationale for why these vitamins might reduce the odds of developing cancer.

Paul Brennan, PhD, of the International Agency for Research on Cancer, Lyon, France, and his colleagues analyzed blood samples obtained in the 1990s from 385,747 people in 10 European countries. By 2006, 899 men and women had been diagnosed with lung cancer, and the researchers compared them specifically with 1,770 people who were matched by age, sex, and country.

Brennan reported that people with the highest blood levels of vitamin B6 had a 56 percent lower risk of lung cancer, regardless of whether they were former smokers, nonsmokers, or current smokers. Current and former smokers with high blood levels of folic acid had a 32 percent lower risk of lung cancer.

Some of the most striking benefits were among people with high blood levels of vitamin B6 and methionine (a protein building block). In this group, nonsmokers had a 44 percent lower risk, former smokers had a 49 percent lower risk, and current smokers had a 58 percent lower risk of lung cancer.

Vitamin B6, folic acid, and methionine play roles in a biochemical process called methylation, which is known to keep cells from becoming cancerous. "Given their involvement in maintaining DNA integrity and gene expression, these nutrients have a potentially important role in inhibiting cancer development, and offer the possibility of modifying cancer risk through dietary changes," wrote Brennan.

Reference: Johansson M, Relton C, Ueland PM, et al. Serum B vitamin levels and risk of lung cancer. *JAMA*, 2010;303: 2377-2385. ❑

Omega-3 Supplements Helpful in Treating 'Major' Depression

A study of 432 middle-age women and men has found that omega-3 supplements can ease major depression – the most severe type.

François Lespérance, MD, of the University of Montreal, Canada, and his colleagues gave the patients either omega-3 supplements or placebos for eight weeks. The supplements had a high ratio of eicosapentaenoic acid (EPA) to docosahexaenoic acid (DHA) – with the patients receiving 1,050 mg of EPA and 150 mg of DHA daily.

About half of the patients had severe anxiety in addition to depression, and 40 percent of the patients were also taking antidepressant medications. The omega-3 supplements led to slight overall improvements in people with depression and anxiety.

However, patients with major depression and no anxiety benefited the most. These patients had a "clear benefit" based on improved scores on two clinical tests used to assess the severity of depression.

Lespérance noted that his study was the largest to focus on omega-3s and major depression. Three smaller studies had found that high-EPA supplements were helpful in treating severe depression.

Reference: Lespérance F, Frasure-Smith N, St-André E, et al. The efficacy of omega-3 supplementation for major depression: a randomized controlled trial. *Journal of Clinical Psychiatry*, 2010; epub ahead of print. ❑

Taking Fish Oil Supplements May Reduce Risk of Breast Cancer

A study of 35,000 women has found that people who take fish oil capsules have a significantly lower risk of breast cancer.

Emily White, PhD, of the Fred Hutchinson Cancer Research Center, Seattle, Washington, investigated whether dietary supplements were associated with a lower risk of breast cancer. The women in the study were between 50 and 76 years of age, and all lived in western Washington state.

Between 2000 and 2007, women who were taking fish oil supplements were 32 percent less likely to be diagnosed with breast cancer. Women who had been taking fish oil capsules for 10 years showed a trend toward lower breast cancer risk.

Most of the risk reduction was related to a lower incidence of ductal cancer, the most common type of breast cancer. Women taking fish oil capsules had a 44 percent lower risk of ductal cancer. The fish oils did not appear to impact the risk of lobular breast cancer.

Other supplements, including black cohosh, dong quai, soy, and St. John's wort, were not associated with a lower risk of breast cancer.

Reference: Brasky TM, Lampe JW, Potter JD, et al. Specialty supplements and breast cancer risk in the vitamins and lifestyle (VITAL) cohort. *Cancer Epidemiology, Biomarkers & Prevention*, 2010;19:OF1-13. ❑

Some Aches and Pains Linked to Low Levels of Vitamin D

A study of 3,075 men in eight European nations has found that chronic pain is often related to low levels of vitamin D.

John McBeth, PhD, of the University of Manchester, England, and his colleagues studied 3,075 men, ages 40 to 79 years. Almost 9 percent reported chronic widespread pain, and 50 percent described having other types of pain.

Men with chronic widespread pain had a 50 percent chance of low vitamin D levels, and those with other types of pain had a 30 percent chance of low vitamin D.

According to McBeth, "musculoskeletal pain problems" are a major global causes of disability, with about 33 percent of people having low-back pain and 10 percent having chronic widespread pain.

Vitamin D is needed for muscle development, and other research has found that the vitamin has mild analgesic properties.

Reference: McBeth J, Pye SR, O'Neill TW, et al. Musculoskeletal pain is associated with very low levels of vitamin D in men: results from the European male ageing study. *Annals of the Rheumatic Diseases*, 2010; doi 10.1136/ard. 2009.116053. ❑

Pycnogenol® Supplements May Ease Allergic Rhinitis Symptoms

Pycnogenol, a antioxidant complex derived from French maritime pine trees, can help reduce the nasal discomfort caused by pollen allergies.

Dale Wilson, MD, of KGK Synergize, a Canadian company that conducts clinical trials, studied 60

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Quick Reviews of Recent Research

• Diet benefits people with type 2 diabetes

Researchers from New Zealand studied 93 men and women with type 2 diabetes, all of whom had failed to decrease their glycated hemoglobin (HbA1c) to under 7% with pharmaceutical treatments. The subjects were given either intensive dietary advice or the "usual" diabetes care. After six months, people given the dietary advice had benefited from significant decreases in HbA1c, weight, body fat, and waist circumference. According to the researchers, the decrease in HbA1c was comparable to adding a new drug treatment.

Coppell KJ. *BMJ*, 2010;341:c3337.

• Vitamin D protects against colorectal cancer

In an effort to identify factors that predict survival in colorectal cancer patients, Japanese researchers measured blood levels of vitamin D in 257 patients around the time of surgery. Only 3 percent of the patients had at least marginally adequate levels of vitamin D (30 ng/ml or higher), and the average vitamin D level among these patients was severely deficient (10 ng/ml). Higher vitamin D levels were associated with longer survival.

Mezawa H. *BMC Cancer*,10:347; doi 10.1186/1471-2407-10-347.

• Aloe cream eases hemorrhoid surgery pain

Physicians from Iran gave either a cream containing *Aloe vera* or a placebo to 49 patients who had undergone surgery for hemorrhoids. The patients were asked to apply the cream to the surgical site three times daily for 28 days. Patients using the *Aloe vera* cream had significantly less pain 12 hours, 24 hours, 48 hours, and two weeks after surgery, compared with those who used the placebo cream. They also had significantly less need for analgesic drugs 12 hours after surgery. In addition, patients using the *Aloe vera* cream had healed significantly after two weeks.

Eshghi F. *Journal of Alternative & Complementary Medicine*, 2010;16:647-650.

• Olive oil turns off inflammation genes

Spanish researchers asked 20 patients with metabolic syndrome to eat two similar low-fat, carbohydrate-rich breakfasts. Both breakfasts contained olive oil, but one was rich in phenolics (a family of antioxidants) and the other was low in phenolics. The high-phenolic olive oil reduced the activity of 79 genes, many of which are known to stimulate inflammation through a variety of biochemical pathways, including nuclear factor kappa beta and arachidonic acid.

Camargo A. *BMC Genomics*, 2010;11:253; doi 10.1186/1471-2164-11-253.

• Herb appears as good as drug for prostate

Extracts of saw palmetto (*Serenoa repens*) berries have long been used as an herbal treatment for benign prostate enlargement, a condition that affects most men after age 50. A Spanish researcher confirmed the benefits of saw palmetto using a proprietary extract in a laboratory study. The extract inhibited an enzyme, 5 alpha reductase, involved in converting testosterone to 5 alpha-dihydrotestosterone, which promotes prostate enlargement. The effect of the saw palmetto extract was equal to that of the drug finasteride.

Pais P. *Advances in Therapy*, 2010;27: doi 10.1017/s12325-010-0041-6.

Pycnogenol Helpful in Allergies...

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people, ages 18 to 65, who were allergic to birch tree pollen. The subjects were asked to take either a 50 mg Pycnogenol tablet or placebo twice daily three to eight weeks before the onset of birch pollen season.

"The best results were found with subjects who took Pycnogenol seven to eight weeks ahead of the allergy season," wrote Wilson of the London, Ontario company.

Overall, people taking Pycnogenol had a 19 percent increase in immunoglobulin E (IgE), a marker of allergic sensitivity, compared with a 32 percent increase among those taking placebos.

People in the study also filled out a questionnaire about their symptoms. Those who took Pycnogenol had fewer nasal and eye symptoms, compared with people taking placebos.

Reference: Wilson D, Evans M, Guthrie N, et al. A randomized, double-blind, placebo-controlled exploratory study to evaluate the potential of Pycnogenol® for improving allergic rhinitis symptoms. *Phytotherapy Research*, 2010: doi 10.1002/ptr.3232. ❑

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