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IN THE NEWS

London Conference Touts Benefits of Lycopene



Leading scientists, researchers, and nutritionists recently gathered for a day-long conference in London on the nutrient lycopene's applications in promoting health and preventing disease. Conference presenters highlighted lycopene's role in protecting the skin, reducing heart disease risk, and supporting prostate health.

Dr. Joseph Levy of Israel's Ben-Gurion University presented evidence that lycopene and other tomato-derived carotenoids protect against ultraviolet (UV) radiation. Dr. Levy found that supplementing human subjects with a tomato paste containing lycopene helped protect against skin erythema, or sunburn. In another study, Dr. Levy demonstrated that tomato-based products are twice as protective as synthetic lycopene against UV-induced sunburn reactions. According to Dr. Levy, carotenoids like lycopene work by stimulating an "antioxidant response element" in the body that protects against carcinogens and other harmful compounds.

Prof. Michael Aviram of the Technion-Israel Institute of Technology presented evidence that lycopene is effective in preventing heart disease. Prof. Aviram believes carotenoids may act as inhibitors of cholesterol synthesis. Six healthy males who took 60 mg of lycopene daily for three months demonstrated significantly reduced serum cholesterol levels by the study's end. Prof. Aviram stated that the combination of natural antioxidants found in tomato paste may be superior to individual antioxidants in protecting LDL (low-density lipoprotein) against oxidation and thus reducing cardiovascular disease risk.

Neil Barber of King's College Hospital in London discussed lycopene's role in protecting prostate health. In a trial of 42 patients who had been diagnosed with prostate cancer but were not receiving treatment, subjects were given 10 mg of lycopene daily and their prostate-specific antigen (PSA) levels were measured each month. The subjects' levels of PSA (a marker of prostate cancer progression) fell by 21% after supplementing with lycopene. Barber noted that lycopene administration may allow patients to play a proactive role in fighting prostate cancer.

—Paul Gains

Vitamin E Tocopherols Reduce Alzheimer's Risk

Mixed vitamin E tocopherols may offer greater protection against Alzheimer's disease than vitamin E alone, according to a recent report in the American Journal of Clinical Nutrition.*

The vitamin E family consists of four tocopherols and four tocotrienols. Alpha tocopherol is the most common form of vitamin E found in dietary supplements, while gamma tocopherol is the most prevalent form in food. Researchers have previously noted that vitamin E from food sources, but not from supplements, is associated with a reduced risk of Alzheimer's.



In a six-year study examining community residents aged 65 and older, the participants completed food frequency questionnaires and underwent cognitive tests and clinical evaluation for Alzheimer's disease. Higher intakes of vitamin E and alpha tocopherol equivalents were found to decrease the incidence of Alzheimer's. With each 5 mg-per-day increase in dietary tocopherols, subjects had a 26-44% lower risk of developing Alzheimer's. Alpha tocopherol and gamma tocopherol were independently associated with Alzheimer's risk. Increased intake of vitamin E also provided protection against cognitive decline.

The study results underscore the importance of daily supplementation with vitamin E and indicate that mixed vitamin E tocopherols may offer greater protection against common diseases of aging such as Alzheimer's than alpha tocopherol alone.

Reference

* Morris MC, Evans DA, Tangney CC, et al. Relation of tocopherol forms to incident Alzheimer disease and to cognitive change. *Am J Clin Nutr.* 2005 Feb;81(2):508-14.

Folate, Vitamin B12 Show Added Heart Benefits

Italian researchers report that folate and vitamin B12 improve three cardiovascular risk factors in patients with pre-diabetes.*

Endothelial dysfunction, insulin resistance, and elevated homocysteine all increase risk for heart disease. Insulin resistance occurs with the cluster of disorders called metabolic syndrome, the precursor to diabetes. Researchers have long known that folate and vitamin B12 reduce cardiovascular disease risk by lowering homocysteine levels. The Italian study showed that in patients with metabolic syndrome, folate and B12 help reduce two other cardiovascular risk factors: endothelial dysfunction and insulin resistance.

In this double-blind study, 50 patients with metabolic syndrome were randomly assigned to either a placebo group or supplement group. Both groups took a placebo for one month. The placebo group then received the placebo for an additional month, while the supplement group received 5000 mcg of folate and 500 mcg of vitamin B12 daily. After just one month of folate and B12 supplementation, homocysteine levels decreased by nearly 30% in the supplemented group. Insulin levels decreased significantly in the supplement group as well, indicating an improvement in insulin resistance. Endothelial function also improved markedly in the supplemented group.

The finding that folate and vitamin B12 reduce three risk factors of cardiovascular disease in those with metabolic syndrome is of enormous importance, as these individuals are at much greater risk for both diabetes and cardiovascular disease. It also suggests that folate and vitamin B12 may help prevent diabetes by improving insulin resistance.

—Linda M. Smith, RN

Reference

* Setola E, Monti LD, Galluccio E, et al. Insulin resistance and endothelial function are improved after folate and vitamin B12 therapy in patients with metabolic syndrome: relationship between homocysteine levels and hyperinsulinemia. *Eur J Endocrinol.* 2004 Oct;151(4):483-9.

Green Tea Cuts Prostate Cancer Risk, Progression



Green tea polyphenols inhibit markers of prostate cancer risk and progression in an animal model, according to scientists at the University of Wisconsin.*

Epidemiological evidence has found that abundant intake of green tea is associated with reduced risk of prostate cancer. The Wisconsin study findings further elucidate green tea's protective role. In their study, researchers administered green tea polyphenols to transgenic mice for six months, while monitoring levels of insulin-like growth factor 1 (IGF-1) and IGF binding protein, as well as markers of cancer metastasis (spread) and angiogenesis (new blood vessel formation, which occurs in disease states such as cancer).

Mice receiving the green tea polyphenols demonstrated a substantial reduction in IGF-1 and an increase in IGF binding protein. Elevated levels of IGF-1 and decreased levels of IGF binding protein have been linked with a greater risk of prostate cancer development and progression. Green tea polyphenols also inhibited markers of metastasis and angiogenesis, which are involved in the spread and progression of cancer.

Through modulating numerous markers of cancer risk, progression, and metastasis, green tea polyphenols appear to offer broad-spectrum protection against prostate cancer. The dose of green tea polyphenols used in the mouse study is roughly equivalent to human consumption of six cups of green tea daily.

—Linda M. Smith, RN

Reference

* Adhami VM, Siddiqui IA, Ahmad N, Gupta S, Mukhtar H. Oral consumption of green tea polyphenols inhibits insulin-like growth factor-I-induced signaling in an autochthonous mouse model of prostate cancer. *Cancer Res.* 2004 Dec 1;64(23):8715-22

IN THE NEWS

Waist Size Predicts Diabetes Risk in Men

A man's waist size may be a stronger indicator of diabetes risk than his body mass index (BMI), report researchers from several prominent universities.*

Although excess weight has long been correlated with increased risk for type II diabetes, few studies have compared the influence of central (versus overall) obesity on diabetes risk. This recent study found that abdominal adiposity (belly fat) is a strong, independent risk factor for type II diabetes. Researchers followed 27,270 men for 13 years. During that time, 884 men developed type II diabetes. Compared to men with the smallest waists (29-34 inches), men with larger waists were at least twice as likely to develop diabetes, and those with the largest waists (of 40 inches or greater) were up to 12 times more likely to develop diabetes.



“Both BMI and waist circumference are useful tools to assess health risk,” noted study lead author Dr. Youfa Wang of the Johns Hopkins Bloomberg School of Public Health. “But abdominal fat measured by waist circumference can indicate a strong risk for diabetes whether or not a man is considered overweight or obese according to his BMI.” Wang added that the commonly used 40-inch waist benchmark for diabetes risk should be lowered, as many of the men who developed type II diabetes had waists measuring less than 40 inches.

Abdominal fat is associated with insulin resistance, a condition of aberrant blood sugar metabolism that often precedes diabetes.

—Elizabeth Wagner, ND

Reference

* Wang Y, Rimm EB, Stampfer MJ, Willett WC, Hu FB. Comparison of abdominal adiposity and overall obesity in predicting risk of type 2 diabetes among men. *Am J Clin Nutr.* 2005 Mar;81(3):555-63.

Tomatoes Protect Against Heart Failure

Abundant intake of tomatoes rich in the nutrient lycopene reduces the risk of congestive heart failure in people with gum disease, according to a recent report from the University of Mississippi Medical Center School of Dentistry.*



Abundant in tomatoes and red fruits like watermelon, lycopene is a potent antioxidant and one of the most prevalent carotenoid nutrients in the Western diet and in human blood serum. Previous research has suggested that lycopene offers protection against heart disease and certain cancers, but its potential role in congestive heart failure has not been carefully examined.

In their study examining data from more than 30,000 men and women enrolled in the National Health and Nutrition Examination Survey (NHANES III), researchers analyzed dietary and blood laboratory data of participants with periodontitis (gum disease) in relation to their medical history of congestive heart failure. In subjects with periodontitis, monthly dietary intake of fewer than nine tomatoes raised the risk of congestive heart failure by 2-3.5 times, and intake of less than three tomatoes increased risk even more. Above-average serum levels of lycopene significantly reduced the risk of congestive heart failure. Higher levels of serum lycopene also were correlated with lower levels of C-reactive protein, an inflammatory marker associated with cardiovascular disease risk.

The study authors concluded that periodontitis is related to risk of congestive heart failure, and that high intake of tomatoes may mitigate this risk. While lycopene may facilitate this risk reduction, possibly by reducing levels of C-reactive protein, other beneficial nutrients found in tomatoes—such as vitamins C and A, folate, potassium, and bioflavonoids—may also contribute to tomatoes' heart-protective benefits in those with gum disease.

—Nelson Wood, DMD, DSc, MS

Reference

* Wood N, Johnson RB. The relationship between tomato intake and congestive heart failure risk in periodontitis subjects. J Clin Periodontol. 2004 Jul;31(7):574-80.

Cranberries Improve Function in Damaged Blood Vessels

A daily dose of cranberry powder restores blood vessel health in animals with high cholesterol and atherosclerosis, according to research presented at the 35th Congress of the International Union of Physiological Sciences, held in San Diego, CA, in April 2005.*

Previous studies have suggested that cranberry juice may support cardiovascular health by boosting levels of beneficial HDL (high-density lipoprotein). Dr. Kris Krus-Elliott of the University of Wisconsin-Madison School of Veterinary Medicine presented evidence that cranberry extract may help to reduce the risk of developing heart disease and protect those who already have atherosclerosis from heart attack and stroke.

In their study, Dr. Krus-Elliott and her team used pigs bred to serve as an animal model of familial high cholesterol. The animals' blood vessels do not function normally, and the pigs generally develop atherosclerosis (thickening and hardening of the arteries) at an early age. This chain of events is similar to heart disease progression in humans.

The animals were fed a daily dose of cranberry juice powder (150 grams of powder per kilogram of body weight) for six months. At the study's end, the cranberry-supplemented pigs with high cholesterol displayed blood vessel function that was more like normal pigs. Pigs with high cholesterol that did not receive the cranberry supplement had significantly less vascular relaxation than the normal or cranberry-fed pigs.

Dr. Krus-Elliott commented, "Since the abnormal functioning of blood vessels is an important component of heart disease, finding ways to improve vascular function in patients with high cholesterol and atherosclerosis is critical to helping protect these patients from consequences such as heart attack or stroke. The value of fruits and vegetables in our diet has recently been an area of intense research, and studies like this help us to understand the specific mechanisms by which the nutrients we consume can protect against heart disease."

—Elizabeth Wagner, ND

Reference

* Available at: <http://www.news-medical.net/?id=8849>. Accessed April 19, 2005.

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