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In The NEWS

FDA Approves Trial of Intravenous Vitamin C for Anti-Cancer Therapy



Last fall, the Food and Drug Administration (FDA) approved the first clinical trial in the US to study whether high doses of intravenous vitamin C are safe and effective in the fight against cancer.

For decades, medicine has been looking at the effects of varying doses of vitamin C against cancer. Nobel Prize winner Linus Pauling popularized the use of vitamin C supplements during the 1970s.¹

Scientific studies have shown that high doses of vitamin C have had significant anti-cancer effects in some animal models.² Other early clinical research has demonstrated that intravenous doses of vitamin C may improve symptoms and prolong survival in terminal cancer patients.³

Researchers at Cancer Treatment Centers of America (CTCA) are taking that work to the next level.

The study is being led by a number of researchers, including Dr. Christopher M. Stephenson, an internal medicine specialist at CTCA, based at Midwestern Regional Treatment Center in Zion, Illinois; Dr. Robert D. Levin, chief of medical oncology at CTCA; and Christopher G. Lis, MPH, a clinical epidemiologist and vice president, research and development, CTCA.

“The first few patients have successfully completed the trial,” said Lis. One of those patients is now on a continuation protocol. A third patient recently enrolled, said Dr. Stephenson. The researchers are recruiting a total of 18 patients for the study. The goal of the research is to discover the optimal therapeutic dose of IV vitamin C in cancer care. “To our knowledge, this is the first Phase I study of vitamin C administered intravenously for cancer patients in the US,” said Lis.

Researchers are looking for female and male patients who have been told by their physicians that:

- They have an advanced-stage, solid tumor
- They have no other treatment options that provide a clinical benefit
- They have a life expectancy of at least three months.

Patients must also be non-smokers of at least 18 years of age to be eligible for the non-commercial research trial. They must also have no other anti-cancer therapies scheduled. The patients who are chosen for the trial by the doctors will receive IV vitamin C in high doses, four days a week for four weeks.

Dr. Stephenson said that one of the goals of the research project is to prolong the survival of advanced-stage cancer patients. He notes that the first group of patients will receive roughly 50 grams of IV vitamin C at a rate of 1 gram per minute. The doctors speak with patients on a daily basis during the study. Those who have completed treatment are eligible for continued therapy with vitamin C. Those patients who take more than 325 mg of aspirin may not be eligible for the study, said Dr. Stephenson.

For more information, please contact Christopher G. Lis at christopher.lis@ctca-hope.com.

—Gene J. Koprowski, MA (University of Chicago), is director of research communications at the Cancer Treatment Centers of America.

Reference

1. Cameron E, Pauling L. The orthomolecular treatment of cancer. I. The role of ascorbic acid in host resistance. *Chem Biol Interact*. 1974 Oct;9(4):273-83.
2. Bishun N, Basu TK, Metcalfe S, Williams DC. The effect of ascorbic acid (vitamin C) on two tumor cell lines in culture. *Oncology*. 1978;35(4):160-2.
3. Riordan NH, Riordan HD, Jackson JA, Casciari JP. Clinical and experimental experiences with intravenous vitamin C. *Journal of Orthomolecular Medicine*. 2000;15(4):201-13.

Diet, Exercise Yield Similar Weight-Loss Effects



Reduced calorie intake and exercise are equally effective in promoting weight loss, according to a recent study.¹

To examine the effects of a 25% energy deficit (25% fewer calories consumed each day than calories burned), scientists examined three groups of overweight but otherwise healthy adults. The subjects followed one of these three programs: 1) a healthy weight-maintenance diet; 2) a calorie-restricted diet (25% decrease in energy intake); or 3) a combination of calorie restriction and exercise (12.5% decrease in energy intake and 12.5% increase in exercise-induced energy expenditure).¹

After six months, both energy-deficit groups (groups 2 and 3) lost approximately 10% of their body weight, 24% of their body fat, and 27% of their abdominal fat. Fat distribution was not altered by either approach, and adding muscle mass did not boost metabolism or speed weight loss. A modest calorie deficit was also associated with beneficial changes in two longevity-associated markers: a lower core body temperature and a reduced fasting insulin level.²

—Elizabeth Wagner, ND

Reference

1. Redman LM, Heilbronn LK, Martin CK, Alfonso A, Smith SR, Ravussin E. Effect of calorie restriction with or without exercise on body composition and fat distribution. *J Clin Endocrinol Metab.* 2007 Jan 2; [Epub ahead of print]
2. Available at: <http://www.reuters.com/article/healthNews/idUSN2623148420070126>. Accessed February 7, 2007.

Vitamin D Guards Against Breast, Colorectal Cancers

Two newly published meta-analyses conclude that higher blood levels of vitamin D could prevent up to two thirds of colorectal cancer cases and up to half of breast cancer cases in the US.*

The colorectal cancer meta-analysis reviewed data from five studies in which blood collected from 1,448 healthy participants was tested for vitamin D and subjects were followed for up to 25 years. The researchers reported that raising serum levels of 25-hydroxyvitamin D to 115 nmol/L, corresponding to a daily intake of 2000 IU of vitamin D3, would reduce the incidence of colorectal cancer by two thirds.

The breast cancer meta-analysis included data from studies involving 1,760 women whose vitamin D levels ranged from less than 33 to 130 nmol/L. Women with the lowest blood levels had the highest rates of breast cancer, which dropped as blood levels of 25-hydroxy-vitamin D increased. The researchers concluded that the serum level associated with a 50% reduction in risk could be maintained by taking 2000 IU of vitamin D3 daily.

—Dayna Dye

Reference

- * Available at: http://health.ucsd.edu/news/2007/2_07_Garland.htm. Accessed February 12, 2007.

Subjects Sought for Peripheral Vascular Disease Trial

The Texas Heart Institute in Houston is recruiting people with critical limb ischemia, a form of severe peripheral vascular disease, to participate in an upcoming clinical trial.*

Characterized by hardening of the arteries that supply blood to the legs and feet, peripheral vascular disease can damage nerves and other tissues. Patients face challenges ranging from reduced mobility to dangerous infections and potential amputation. Current treatments, which include surgical bypass of affected arteries, are considered inadequate at best.

The Houston investigators are pioneering the use of patients' own bone-marrow-derived adult stem cells to help reverse some of the damage to blood vessels. Patients will have their marrow either injected directly into affected limbs or sorted by a machine designed to extract viable stem cells, which will then be injected directly into affected limbs.

Investigators hope that adult stem cells derived from subjects' bone marrow will help improve blood flow to affected limbs, providing a novel way to treat critical limb ischemia. For more information, call 832-355-9404, visit www.texasheart.org/stemcell, or email plea@heart.thi.tmc.edu.

—Dale Kiefer

Reference

* Available at: <http://www.stemcellresearchnews.com/absolutenm/anmviewer.asp?a=431&z=5>. Accessed February 20, 2007.

Olive Polyphenols May Ward Off Ulcers, Stomach Cancer



Polyphenols derived from olive oil may help protect against peptic ulcers (of the esophagus, stomach, or upper small intestine) and gastric (stomach) cancers, according to a newly released report.*

Most peptic ulcers, and some gastric cancers, are caused by *Helicobacter pylori* (*H. pylori*) bacterium. Antibiotic treatment of *H. pylori* is lengthy and difficult, as antibiotic-resistant microorganisms are increasingly prevalent worldwide.

Polyphenols are powerful antioxidants thought to be responsible for many of the health-promoting effects of fruits and vegetables. Olive oil is also an abundant source of these phytochemicals. In the laboratory, scientists noted that polyphenols derived from olive oil were highly stable in an aqueous, acidic environment similar to that of the stomach. They also displayed potent bacteria-killing effects against eight different strains of *H. pylori*, including three antibiotic-resistant strains. The antibacterial effects of olive polyphenols were even stronger than those of polyphenols from tea, wine, and other plant extracts. Even very low concentrations of olive polyphenols effectively killed *H. pylori* bacteria.

—Elizabeth Wagner, ND

Reference

* Romero C, Medina E, Vargas J, Brenes M, Castro AD. In vitro activity of olive oil polyphenols against *Helicobacter pylori*. *J Agric Food Chem*. 2007 Feb 7; 55(3):680-6.

Vegetables, Nutrients Lower Risk of BPH



Johns Hopkins researchers report that vegetables, beta-carotene, lutein, and vitamin C have a protective effect against benign prostatic hyperplasia (BPH), a common condition in older men.* BPH is associated with lower urinary tract symptoms thought to be caused by enlargement of the prostate gland.

The study evaluated data from 51,529 participants who enrolled in the Health Professionals Follow Up Study in 1986. Dietary questionnaires at enrollment and every two years collected information on new diagnoses. The risk of BPH decreased with increased vegetable intake. Men whose vegetable intake was in the top fifth of participants had an 11% lower risk of BPH than those whose intake was in the lowest fifth. Fruits and vegetables rich in beta-carotene and lutein, and those high in vitamin C, were separately found to be protective.*

The study authors concluded, "Our findings are consistent with the hypothesis that a diet rich in vegetables and in beta-carotene, lutein, and vitamin C derived from foods may reduce the occurrence of BPH."

—Dayna Dye

Reference

*Rohrmann S, Giovannucci E, Willett WC, Platz EA. Fruit and vegetable consumption, intake of micronutrients, and benign prostatic hyperplasia in US men. *Am J Clin Nutr.* 2007 Feb;85(2):523-9.

Natural Fiber May Reduce Overeating, Improve Lipids



Canadian scientists have uncovered evidence that a natural fiber known as oligofructose may help reduce overeating and improve blood lipids.*

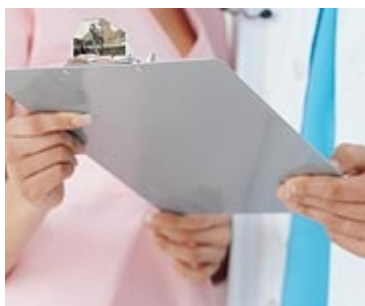
Available as a dietary supplement, this non-digestible food compound selectively stimulates the growth or activity of certain bacteria in the colon. In animal studies, oligofructose increased levels of the satiety hormone glucagon-like peptide (GLP-1) and of a gene in the intestines that helps the body to create more GLP-1. Lean and genetically obese rats that were fed diets enhanced with oligofructose and inulin (another fiber) for eight weeks greatly lowered their food intake and improved their blood lipid profiles. Scientists at the University of Calgary are now launching the first human trial of the fiber.

—Dayna Dye

Reference

* Available at: <http://ihealthbulletin.com/blog/2007/01/31/fos-natural-probiotic-supplement-may-promote-weight-loss/>. Accessed February 12, 2007.

Calcium Reduces Colorectal Polyp Recurrence



Dartmouth Medical School researchers report that supplementing with calcium helps prevent the recurrence of colorectal polyps over a multi-year period.* Polyps, or adenomas, are non-cancerous tumors that are a precursor to colorectal cancer.

The scientists followed 822 men and women who took a daily supplement providing 1200 mg of calcium over four years. Calcium reduced the risk of polyp recurrence by 17% compared to a placebo. The subjects were then followed for an additional period averaging seven years. Over the first five years of follow-up, those who received calcium supplements in the previous study had a 37% lower adjusted risk of adenoma recurrence compared to placebo. The calcium-supplemented subjects also lowered their risk of advanced adenomas.

“Our study provides further evidence of the potential of calcium as a chemopreventive agent against colorectal adenomas among individuals with a history of these tumors,” the authors concluded.

—Dayna Dye

Reference

* Grau MV, Baron JA, Sandler RS, et al. Prolonged effect of calcium supplementation on risk of colorectal adenomas in a randomized trial. *J Natl Cancer Inst.* 2007 Jan 17;99(2):129-36.

Folic Acid Cuts Risk of Cleft Lip in Infants

Women who consume folic acid supplements early in their pregnancies markedly reduce the risk of cleft lip in their infants, according to a newly published study from Norway.* Cleft lip often accompanies cleft palate, a common birth defect.

Researchers examined 377 infants born with cleft lip with or without cleft palate, 196 infants with cleft palate, and 763 healthy babies born between 1996 and 2000. Their mothers were questioned about smoking, drug use, diet, and multivitamin and folic acid supplement use during the first three months of pregnancy. Food-frequency questionnaires completed by the mothers were analyzed for folate content.

Women who supplemented with at least 400 mcg of folic acid daily reduced the risk of cleft lip in their infants by 40%. Folate from diet alone had a more moderate benefit, with a 25% risk reduction in infants born to women whose intake was among the top half of the group. Women who consumed at least a 400-mcg folic acid supplement, whose dietary intake of folate was in the top half of subjects, and who also consumed a multivitamin supplement had a 74% lower risk of cleft lip in their infants compared to women who took none of these measures.

—Dayna Dye

Reference

* Wilcox AJ, Lie RT, Solvoll K, et al. Folic acid supplements and risk of facial clefts: national population based case-control study. *BMJ*. 2007 Jan 26; [Epub ahead of print].

Low-Dose Aspirin May Reduce Asthma Risk

Low-dose aspirin taken every other day reduced the risk of developing asthma in a large-scale clinical trial, report researchers at Brigham and Women's Hospital in Boston.*

The double-blind Physician's Health Study tracked 22,071 healthy male physicians, aged 40-84, who consumed low-dose aspirin or a placebo on alternate days. The study was terminated after nearly five years, when a dramatic 44% reduction in the risk of a first heart attack was found among those who took aspirin. Of the 11,037 men who took aspirin, 113 developed asthma, compared to 145 who received a placebo and developed asthma. The risk reduction was not affected by smoking status, body mass index, or age.

According to the study authors, "Aspirin reduced the risk by 22% of newly diagnosed adult-onset asthma. These results suggest that aspirin may reduce the development of asthma in adults."

—Dayna Dye

Editor's note: *Aspirin reduced the risk of developing new-onset asthma in these adults. For some people who already have asthma, however, aspirin can act as an irritant that may trigger asthma symptoms.*

Reference

* Barr RG, Kurth T, Stampfer MJ, Buring JE, Hennekens CH, Gaziano JM. Aspirin and decreased adult-onset asthma: randomized comparisons from the physicians' health study. *Am J Respir Crit Care Med*. 2007 Jan 15;175(2):120-5.

Scientists Warn of Osteoporosis Risk in Men



Long viewed as a women's disease, osteoporosis can severely afflict men as well, and physicians can no longer afford to overlook the disease in male patients, according to Canadian researchers.*

While one in four older women are thought to have osteoporosis, one in eight men over the age of 50 has the disease, and one in three men die following a fracture, compared to one in five women. The Canadian researchers recently developed guidelines for the diagnosis, treatment, and management of male osteoporosis. The guidelines identify primary and secondary risk factors for the disease, and recommend bone mineral density testing for all men over 65 and in younger men with osteoporosis risk factors, as well as long-term monitoring of height to detect compression fractures of the spine. Recommended treatment options include bisphosphonate drugs and consumption of 800 IU or more per day of vitamin D.

—Dayna Dye

Reference

* Khan AA, Hodsman AB, Papaioannou A, Kendler D, Brown JP, Olszynski WP. Management of osteoporosis in men: an update and case example. *CMAJ*. 2007 Jan 30;176(3):345-8.

Quercetin Repels Viral Illness, Counters Stress

Quercetin, an antioxidant compound found in foods such as red grapes and green tea, reduces viral illnesses and helps maintain mental performance under conditions of extreme physical stress, according to researchers at Appalachian State University.*

In a federally funded, double-blind, randomized, placebo-controlled study, 40 cyclists were given either 1000 mg of quercetin (combined with vitamin C and niacin to aid absorption) or a placebo for five weeks. During the third week, the athletes rode a bicycle to the point of exhaustion, three hours a day for three days. Blood and tissue samples were analyzed to ascertain physiological changes.

Forty-five percent of those given the placebo reported illness after being physically stressed, compared to only 5% of the group that received quercetin. No side effects were observed. The scientists observed that "this is the first clinical study that has found a natural plant compound to prevent viral illness." The athletes taking the quercetin supplement also maintained their ability to react to an alertness test when exhausted, whereas those who took the placebo became measurably slower.

—Dayna Dye

Reference

* Available at: <http://www.news.appstate.edu/2007/02/08/health-5/>. Accessed February 13, 2007.

Vitamin D Prevents Alcohol-Related Bone Loss



Excessive alcohol consumption can damage bones as well as the liver. However, consuming vitamin D or the osteoporosis drug ibandronate (Boniva®) helps prevent bone loss caused by regular binge drinking, report Loyola University scientists.*

Repeated binge drinking decreases bone mineral density and bone strength, contributing to osteoporosis. Until now, however, ways to prevent or reverse alcohol-related bone loss have been unknown. The Loyola scientists administered either vitamin D or ibandronate to male mice, and then exposed them to alcohol. Pretreatment with vitamin D prevented alcohol-induced bone loss, while increasing bone mineral density in the tibia (shin bone) and lower spine. Pretreatment with ibandronate similarly prevented alcohol-related bone loss.

Although vitamin D works by building bone and ibandronate works by offsetting age-related bone loss, the two produce similar protective benefits for bone health in those exposed to alcohol.

—Elizabeth Wagner, ND

New York Academy of Sciences Highlights Neuroprotective Benefits of Life Extension Phytoestrogen Formula



Life Extension's phyto-estrogen formula provides powerful neuroprotective benefits, according to a recent report published in the prestigious *Annals of the New York Academy of Sciences*.¹ Italian scientists with no financial ties to Life Extension conducted the study.

The researchers examined the ability of Life Extension's Natural Estrogen supplement—a blend of plant-derived phytoestrogens such as soy and licorice root—to protect the central nervous system against inflammation and degeneration. The study focused on cells in the central nervous system that fuel neuro-degenerative diseases by releasing large amounts of inflammatory cytokines.

For two weeks, adult female rats were fed standard food and the Natural Estrogen formula, while a control group received standard food but no formula.

The scientists then harvested cells from the animals' central nervous systems and exposed them to an inflammation-provoking toxin. For the next 24 hours, they measured levels of inflammatory and protective cytokines in the cell cultures.

Exposure to the toxin increased levels of all the measured cytokines, but cells of the phytoestrogen-supplemented rats displayed significantly lower levels of pro-inflammatory cytokines (such as tumor necrosis factor-alpha, interleukin beta, and interleukin-6) and higher levels of a neuroprotective compound known as transforming growth factor beta.¹ These findings suggest that the formula protects brain and nervous system health by decreasing the production of disease-provoking cytokines.

While this study utilized Life Extension's Natural Estrogen formula, consumers now have access to the advanced Natural Estrogen with Pomegranate Extract formula. Pomegranate further helps to suppress the production of inflammatory cytokines,² making it one of the most powerful health-promoting remedies available today.

—Elizabeth Wagner, ND

Reference

1. Marotta F, Mao GS, Liu T, et al. Anti-inflammatory and neuroprotective effect of a phytoestrogen compound on rat microglia. *Ann N Y Acad Sci*. 2006 Nov;1089:276-81.
2. Ahmed S, Wang N, Hafeez BB, Cheruvu VK, Haqqi TM. Punica granatum L. extract inhibits IL-1beta-induced expression of matrix metalloproteinases by inhibiting the activation of MAP kinases and NF-kappaB in human chondrocytes in vitro. *J Nutr*. 2005 Sep;135(9):2096-102.

Fish, Plant Foods Lower Risk of Blood Clots



A diet rich in plant foods and fish, with little meat, is associated with reduced rates of deep vein thrombosis or pulmonary embolism, according to researchers at the University of Minnesota.*

The scientists analyzed data from 14,962 participants in the Atherosclerosis Risk in Communities (ARIC) study to determine whether consuming fish, vegetables, and fruit was linked to a lower incidence of venous thromboembolism over an average 12.5 years of follow-up. Dietary questionnaires were completed by participants at the study onset and during the sixth year. One hundred ninety-six cases of deep vein thrombosis or pulmonary embolism were identified during the follow-up period.

Participants in the top fifth of fruit and vegetable intake had a 41% lower risk of venous thromboembolism compared to those whose intake was in the lowest fifth. Eating fish at least once a week was associated with a 30-45% lower incidence of the condition compared to less frequent fish consumption. Venous thromboembolism incidence was 34-51% lower for those who consumed at least 160 mcg of folate daily compared to those who

consumed less. Vitamin B6 and omega-3 fatty acid intake also appeared to be protective, while meat intake was associated with increased risk.

—Dayna Dye

Reference

* Steffen LM, Folsom AR, Cushman M, Jacobs DR Jr, Rosamond WD. Greater fish, fruit, and vegetable intakes are related to lower incidence of venous thromboembolism: the Longitudinal Investigation of Thromboembolism Etiology. *Circulation*. 2007 Jan 16;115(2):188-95.

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