



The Vitamin & Herb Stores

# **#84**

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**Public release date: 7-Jun-2010**

**Tumor virus is best predictor of throat cancer survival**

**COLUMBUS, Ohio – The presence of human papilloma virus, the virus that causes cervical cancer, in tumors is the most important predictor of survival for people diagnosed with oropharyngeal cancer (cancer of the back of the mouth), according to a new study led by a researcher at the Ohio State University Comprehensive Cancer Center-Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC-James).**

Published online June 7 in the New England Journal of Medicine with a related editorial, this is the first study large enough to show that the presence of human papilloma virus (HPV) in tumors accounts for better response to therapy, rather than other favorable factors that may be present, such as young age and small tumors.

The second leading predictor of survival is lifetime smoking history, followed by cancer stage.

The findings suggest that the HPV status of a patient's tumor and their smoking history may be used in the future, in addition to cancer stage, to determine the aggressiveness of a patient's therapy.

"Previous studies indicated a relationship existed between the presence or absence of HPV in oropharyngeal tumors and patient survival, but they couldn't determine if other favorable factors present in these patients were responsible for their better outcome," says study leader Dr. Maura Gillison, a medical oncologist and head and neck cancer specialist at the OSUCCC-James.

"These findings close the door on these questions and will allow the field to move forward with clinical trials designed to determine how we should use molecular and behavioral factors to personalize therapy for patients."

Gillison emphasized that there is insufficient data at this time to indicate how a specific patient's cancer therapy should be tailored based on these factors.

Gillison and her colleagues analyzed the tumors and outcomes of 323 patients with stage III or IV oropharyngeal cancer who were part of a Radiation Therapy Oncology Group clinical trial. Of these patients, 206 had HPV-positive tumors and 117 had HPV-negative tumors.

**At three years after treatment, 82 percent of patients with HPV-positive tumors were still alive, compared with 57 percent of patients with HPV-negative tumors. Rates of cancer relapse at three years for the groups were 43 percent and 74 percent, respectively.**

The investigators determined that HPV presence in tumors accounted for most of the difference in therapy response and survival between patients with HPV-positive and HPV-negative tumors, while factors such as younger age, white race, better energy level, absence of anemia and smaller tumors were responsible for only about 10 percent of the difference.

Smoking history emerged as the second most important independent predictor of survival and cancer relapse for patients with oropharyngeal cancer. The risk of cancer relapse or death increased by one percent for each additional pack year of tobacco smoking (one pack year is equivalent to smoking one pack a day for a year).

**The investigators found that at three-years, about 93 percent of patients with HPV-positive tumors who were never or light- smokers were alive, as compared to about 70 percent of patients with HPV-positive tumors who were smokers and about 46 percent of patients with HPV-negative tumors who were smokers.**

"The two risk factors that place an individual at risk for oropharyngeal cancer are also the most important

factors determining patient survival. This is probably because these factors determine the genetic profile of these cancers and how they respond to treatment," Gillison says.

Gillison and her colleagues have since conducted a follow-up study to further investigate the influence of tobacco smoking on oropharyngeal cancer. She reported these findings June 7 at the 2010 annual meeting of American Society of Clinical Oncology.

Ralph's Note - Time to Re-Think the Useless HPV vaccine....

## **Public Release: 8-Jun-2010**

### **Molecular link between diabetes and schizophrenia connects food and mood**

Defects in insulin function – which occur in diabetes and obesity – could directly contribute to psychiatric disorders like schizophrenia.

Vanderbilt University Medical Center investigators have discovered a molecular link between impaired insulin signaling in the brain and schizophrenia-like behaviors in mice. The findings, reported June 8 in PLoS Biology, offer a new perspective on the psychiatric and cognitive disorders that affect patients with diabetes and suggest new strategies for treating these conditions.

"We know that people with diabetes have an increased incidence of mood and other psychiatric disorders," said endocrinologist Kevin Niswender, M.D., Ph.D. "And we think that those co-morbidities might explain why some patients have trouble taking care of their diabetes."

"Something goes wrong in the brain because insulin isn't signaling the way that it normally does," said neurobiologist Aurelio Galli, Ph.D.

Galli's group was among the first to show that insulin – the hormone that governs glucose metabolism in the body – also regulates the brain's supply of dopamine – a neurotransmitter with roles in motor activity, attention and reward. Disrupted dopamine signaling has been implicated in brain disorders including depression, Parkinson's disease, schizophrenia and attention-deficit hyperactivity disorder.

Now, Galli, Niswender, and colleagues have pieced together the molecular pathway between perturbed insulin signaling in the brain and dopamine dysfunction leading to schizophrenia-like behaviors.

The researchers developed mice with an insulin-signaling defect only in neurons (they impaired the function of the protein Akt, which transmits insulin's signal inside cells). They found that the mice have behavioral abnormalities similar to those frequently seen in patients with schizophrenia.

**They also showed how defects in insulin signaling disrupt neurotransmitter levels in the brain – the mice have reduced dopamine and elevated norepinephrine in the prefrontal cortex, an important area for cognitive processes. These changes resulted from elevated levels of the transporter protein (NET) that removes norepinephrine and dopamine from the synaptic space between neurons.**

**"We believe the excess NET is sucking away all of the dopamine and converting it to norepinephrine, creating this situation of hypodopaminergia (low levels of dopamine) in the cortex," Galli explained. Low dopamine function in the cortex is thought to contribute to the cognitive deficits and negative symptoms – depression, social withdrawal – associated with schizophrenia.**

By treating the mice with NET inhibitors (drugs that block NET activity), the investigators were able to restore normal cortical dopamine levels and behaviors. Clinical trials of NET inhibitors in patients with schizophrenia are already under way, Galli said, and these new data provide mechanistic support for this

approach.

The findings also provide a molecular basis for interpreting previous reports of Akt deficiencies in patients with schizophrenia, as revealed by post-mortem, imaging and genetic association studies.

Galli and Niswender suggest that the insulin to Akt signaling pathway is critical for "fine-tuning" the function of monoamine neurotransmitters – dopamine, norepinephrine and serotonin – and that it can be impaired in many different ways.

"Dysregulation of this pathway – because of type 1 diabetes, because of a high-fat diet, because of drugs of abuse, because of genetic variations – may put a person on the road to neuropsychiatric disorders," Galli said.

Understanding the molecular link between insulin action and dopamine balance – the connection between food and mood – offers the potential for novel therapeutic approaches, the researchers said. The mouse model described in the current studies may be useful for testing schizophrenia and cognition-enhancing treatments.

**Public release date: 8-Jun-2010**

## **Healthy diet could slow or reverse early effects of Alzheimer's disease**

Patients in the early to moderate stages of Alzheimer's Disease could have their cognitive impairment slowed or even reversed by switching to a healthier diet, according to researchers at Temple University.

In a previous study [[http://www.temple.edu/newsroom/2009\\_2010/12/stories/alzheimers.htm](http://www.temple.edu/newsroom/2009_2010/12/stories/alzheimers.htm)], researchers led by Domenico Praticò, an associate professor of pharmacology in Temple's School of Medicine, demonstrated that a diet rich in methionine could increase the risk of developing Alzheimer's Disease. Methionine is an amino acid typically found in red meats, fish, beans, eggs, garlic, lentils, onions, yogurt and seeds.

"The question we asked now as a follow-up is if, for whatever reason, you had made bad choices in your diet, is there a chance you can slow down or even reverse the disease or is it too late — that there is nothing you could do," said Praticò.

As in the previous study, the researchers fed one group of mice a diet high in methionine and another group a regular, healthy diet. After five months, they split the group receiving the methionine-rich diet into two, with one group continuing the amino-heavy diet while the second switched to the healthy diet for an additional two months.

**"At the end of the study, when we looked at these mice, what we found — very surprisingly — was that switching to a more healthy diet reversed the cognitive impairment that had built up over the first three months of eating the methionine-rich diet," said Praticò. "This improvement was associated with less amyloid plaques — another sign of the disease — in their brains.**

Praticò said that the cognitive impairment that had been observed in the mice after three months on the methionine-rich diet was completely reversed after two months on the healthier diet, and they were now able to function normally.

"We believe this finding shows that, even if you suffer from the early effects of MCI or Alzheimer's, switching to a healthier diet that is lower in methionine could be helpful in that memory capacity could be improved," he said.

Praticò stressed that this was not a drug therapy for curing MCI or Alzheimer's, but that it did demonstrate

that a lifestyle change such as diet can improve some of the impairments that have already occurred in the brain.

"What it tells us is that the brain has this plasticity to reverse a lot of the bad things that have occurred; the ability to recoup a lot of things such as memory that were apparently lost, but obviously not totally lost," he said.

Pratico also emphasized that the researchers believe that in addition to switching to a healthy diet, patients diagnosed with MCI or Alzheimer's also need a regiment of physical as well as mental exercises.

"This combination won't cure you, but we believe, as we saw in this study, that it will be able to slow down or even possibly reverse the effects on the cognitive impairment," he said.

**Public release date: 9-Jun-2010**

## **Pecans provide neurological protection**

Study suggests pecans may delay progression of motor neuron degeneration

Lowell, MA – Eating about a handful of pecans each day may play a role in protecting the nervous system, according to a new animal study published in the current issue of Current Topics in Nutraceutical Research. The study, conducted at the Center for Cellular Neurobiology at the University of Massachusetts Lowell, suggests adding pecans to your diet may delay the progression of age-related motor neuron degeneration. This may include diseases like amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig's Disease.

**Researchers suggest vitamin E – a natural antioxidant found in pecans – may provide a key element to neurological protection shown in the study. Antioxidants are nutrients found in foods that help protect against cell damage, and studies have shown, can help fight diseases like Alzheimer's, Parkinson's, cancer and heart disease. Pecans are the most antioxidant-rich tree nut and are among the top 15 foods to contain the highest antioxidant capacity, according to the U.S. Department of Agriculture (USDA).**

"These findings suggest regular consumption of pecans may provide significant nutritive and antioxidant benefits for your body," said lead researcher Thomas B. Shea, PhD.

Dr. Shea and his research team carried out a number of laboratory studies on three groups of mice specifically bred to demonstrate severe decline in motor neuron function that are commonly used in studies of ALS. Each of the three groups was fed a control diet or one of two diets containing differing amounts of pecans ground into their food. Standard testing methods were used to determine how well the mice scored relative to motor neuron functions, both before and after they were provided with one of the three diets.

Mice provided a diet supplemented with pecans displayed a significant delay in decline in motor function compared to mice receiving no pecans. Mice eating the diet with the most pecans (0.05%) fared best. Both pecan groups fared significantly better than those whose diets contained no pecans. The result was based on how the mice performed in highly specific tests, each of which compared mice on the control diet with mice consuming pecan-enriched diets.

"Eating healthy doesn't have to mean eating bland," said Beth Hubrich, a registered dietitian with the National Pecan Shellers Association. "Pecans are a tasty addition to a healthy diet and scientific research continues to show they're good for you as well."

Eating a handful of pecans will also provide you with more than 19 vitamins and minerals, including vitamin A, folic acid, calcium, magnesium, phosphorus, zinc and several B vitamins, Hubrich said. Pecans are naturally cholesterol-free and sodium-free.

**Public release date: 9-Jun-2010**

## **New evidence that drinking coffee may reduce the risk of diabetes**

Scientists are reporting new evidence that drinking coffee may help prevent diabetes and that caffeine may be the ingredient largely responsible for this effect. Their findings, among the first animal studies to demonstrate this apparent link, appear in ACS' bi-weekly Journal of Agricultural and Food Chemistry.

Fumihiko Horio and colleagues note that past studies have suggested that regular coffee drinking may reduce the risk of type 2 diabetes. The disease affects millions in the United States and is on the rise worldwide. However, little of that evidence comes from studies on lab animals used to do research that cannot be done in humans.

The scientists fed either water or coffee to a group of laboratory mice commonly used to study diabetes.

**Coffee consumption prevented the development of high-blood sugar and also improved insulin sensitivity in the mice, thereby reducing the risk of diabetes. Coffee also caused a cascade of other beneficial changes in the fatty liver and inflammatory adipocytokines related to a reduced diabetes risk.** Additional lab studies showed that caffeine may be "one of the most effective anti-diabetic compounds in coffee," the scientists say.

**Public release date: 9-Jun-2010**

## **Polyphenols in red wine and green tea halt prostate cancer growth**

New report in the FASEB Journal suggests that disrupting a particular cellular signaling pathway could stop or slow the initiation, promotion, and progression of prostate cancer

**In what could lead to a major advance in the treatment of prostate cancer, scientists now know exactly why polyphenols in red wine and green tea inhibit cancer growth.**

This new discovery, published online in The FASEB Journal (<http://www.fasebj.org>), explains how antioxidants in red wine and green tea produce a combined effect to disrupt an important cell signaling pathway necessary for prostate cancer growth. This finding is important because it may lead to the development of drugs that could stop or slow cancer progression, or improve current treatments.

**"Not only does SphK1/S1P signaling pathway play a role in prostate cancer, but it also plays a role in other cancers, such as colon cancer, breast cancer, and gastric cancers,"** said Gerald Weissmann, MD, editor-in-chief of The FASEB Journal. "Even if future studies show that drinking red wine and green tea isn't as effective in humans as we hope, knowing that the compounds in those drinks disrupts this pathway is an important step toward developing drugs that hit the same target."

Scientists conducted in vitro experiments which showed that the inhibition of the sphingosine kinase-1/sphingosine 1-phosphate (SphK1/S1P) pathway was essential for green tea and wine polyphenols to kill prostate cancer cells. Next, mice genetically altered to develop a human prostate cancer tumor were either treated or not treated with green tea and wine polyphenols. The treated mice showed reduced tumor growth as a result of the inhibited SphK1/S1P pathway. To mimic the preventive effects of polyphenols, another experiment used three groups of mice given drinking water, drinking water with a green tea compound known as EGCg, or drinking water with a different green tea compound, polyphenon E. Human prostate cancer cells were implanted in the mice and results showed a dramatic decrease in tumor size in the mice drinking the EGCg or polyphenon E mixtures.

**"The profound impact that the antioxidants in red wine and green tea have on our**

**bodies is more than anyone would have dreamt just 25 years ago," Weissmann added. "As long as they are taken in moderation, all signs show that red wine and green tea may be ranked among the most potent 'health foods' we know."**

**Public release date: 10-Jun-2010**

## **Scottish people 'living dangerously'**

**Almost the entire adult population of Scotland (97.5%) are likely to be either cigarette smokers, heavy drinkers, physically inactive, overweight or have a poor diet.** Researchers writing in the open access journal BMC Public Health also found a strong association between the presence of several of these risk factors and low income.

David Conway, from the University of Glasgow, Scotland, worked with a team of researchers to study data from 6574 participants in the Scottish Health Survey 2003. He said, "Our analysis shows that around two-thirds of the Scottish population is overweight or obese, a similar proportion are not sufficiently physically active, and most people have a poor diet – it is just that it is not the same majority for each factor. The most important determinants of multiple risk factors were low educational attainment and residence in our most deprived communities".

The prevalence of multiple behavioural risk factors was high, with 86% having at least two risk factors; 55% having three or more risk factors; and nearly 20% having four or all five risk factors. Furthermore these risk factors are strongly associated with low socio-economic circumstances. The researchers caution that, as the behaviours were self-reported, the real situation may be even worse than these figures suggest. According to Conway, "Respondents might tend to give answers that would convey more favourable behaviours. This was confirmed for alcohol consumption by an analysis comparing self-reported alcohol intake in the Scottish Health Surveys with alcohol sales estimates, which suggested that surveys may understate alcohol consumption by as much as 50%".

**Public release date: 14-Jun-2010**

## **Replacing white rice with brown rice or other whole grains may reduce diabetes risk**

Boston, MA—In a new study, researchers from the Harvard School of Public Health (HSPH) have found that eating five or more servings of white rice per week was associated with an increased risk of type 2 diabetes. In contrast, eating two or more servings of brown rice per week was associated with a lower risk of the disease. **The researchers estimated that replacing 50 grams of white rice (just one third of a typical daily serving) with the same amount of brown rice would lower risk of type 2 diabetes by 16%. The same replacement with other whole grains, such as whole wheat and barley, was associated with a 36% reduced risk.**

The study is the first to specifically examine white rice and brown rice in relation to diabetes risk among Americans, said Qi Sun, who did the research while at HSPH and is now an instructor of medicine at Brigham and Women's Hospital in Boston. "Rice consumption in the U.S. has dramatically increased in recent decades. We believe replacing white rice and other refined grains with whole grains, including brown rice, would help lower the risk of type 2 diabetes," said Sun.

The study appears online June 14, 2010, on the website of the journal Archives of Internal Medicine. Brown rice is superior to white rice when it comes to fiber content, minerals, vitamins, and phytochemicals, and it often does not generate as large an increase in blood sugar levels after a meal. Milling and polishing brown rice removes most vitamins and minerals. In addition, milling strips away most of its fiber, which

helps deter diabetes by slowing the rush of sugar (glucose) into the bloodstream.

The researchers, led by Sun, and senior author Frank Hu, professor of nutrition and epidemiology at HSPH, examined white and brown rice consumption in relation to type 2 diabetes risk in 157,463 women and 39,765 men participating in the Brigham and Women's Hospital-based Nurses' Health Study I and II and the Health Professionals Follow-up Study. The researchers analyzed responses to questionnaires about diet, lifestyle, and health conditions which participants completed every four years. They documented 5,500 cases of type 2 diabetes during 22 years of follow-up in NHS I participants, 2,359 cases over 14 years in NHS II participants, and 2,648 cases over 20 years in HPFS participants.

Sun and his colleagues found that the biggest consumers of white rice were less likely to have European ancestry or to smoke and more likely to have a family history of diabetes. Eating brown rice was not associated with ethnicity but with a more health-conscious diet and lifestyle. In the analysis, researchers adjusted for a variety of factors that could influence the results, including age, body mass index, smoking status, alcohol intake, family history of diabetes, and other dietary habits, and found that the trend of increased risk associated with high white rice consumption remained. Because ethnicity was associated with both white rice consumption and diabetes risk, the researchers conducted a secondary analysis of white participants only and found similar results.

Because brown rice consumption was low in the study population, the researchers could not determine whether brown rice intake at much higher levels was associated with a further reduction in diabetes risk. Substitution of other whole grains for white rice was more strongly associated with lowering diabetes risk. This observation, said the researchers, may result from more reliable estimates based on participants' higher consumption of whole grains other than brown rice.

The current Dietary Guidelines for Americans, released by the U.S. government, identifies grains, including rice, as one of the primary sources of carbohydrates and recommends that at least half come from whole grains. Americans are eating more rice — but it's mostly white. "From a public health point of view, whole grains, rather than refined carbohydrates, such as white rice, should be recommended as the primary source of carbohydrates for the U.S. population," said Hu, "These findings could have even greater implications for Asian and other populations in which rice is a staple food."

**Public release date: 14-Jun-2010**

## **Apple juice improves behavior but not cognition in Alzheimer's patients**

Los Angeles, CA (June 14, 2010) Apple juice can be a useful supplement for calming the declining moods that are part of the normal progression of moderate-to-severe Alzheimer's Disease (AD), according to a study in *American Journal of Alzheimer's Disease and Other Dementias (AJADD)*, published by SAGE.

In the AJADD study, after institutionalized AD patients consumed two 4-oz glasses of apple juice a day for a month, their caregivers reported no change in the patients' Dementia Rating Scale or their day-to-day abilities. What did change, however, was the behavioral and psychotic symptoms associated with their dementia (as quantified by the Neuropsychiatric Inventory), **with approximately 27% improvement, mostly in the areas related to anxiety, agitation, and delusion.**

Alzheimer's disease is characterized by a progressive loss of memory, decline in cognitive function, behavioral changes, and the loss in ability to do daily activities, all of which causes a significant caregiver burden and increased health care costs. While pharmacological treatments can provide temporary reduction in AD symptoms, they're costly and cannot prevent the ultimate decline in cognitive and behavioral function. That's why the authors considered it important to discover any possible nutritional interventions.

"The modest, but statistically significant, impact of apple juice on the behavioral and psychological symptoms of dementia in this study adds to the body of evidence supporting the usefulness of nutritional approaches, including fruit and vegetable juices, in delaying the onset and progression of Alzheimer's

Disease, even in the face of known genetic risk factors," write the authors, Ruth Remington, RN, PhD, Amy Chan, PhD, Alicia Lepore, MS, Elizabeth Kotlya, MS, and Thomas B. Shea, PhD, "As in prior studies with vitamin supplements, it indicates that nutritional supplementation can be effective even during the late stages of AD."

**Public release date: 15-Jun-2010**

## **Higher levels of vitamin B6, common amino acid associated with lower risk of lung cancer**

An analysis that included nearly 400,000 participants finds that those with higher blood levels of vitamin B6 and the essential amino acid methionine (found in most protein) had an associated lower risk of lung cancer, including participants who were current or former smokers, according to a study in the June 16 issue of JAMA.

Previous research has suggested that deficiencies in B vitamins may increase the probability of DNA damage and subsequent gene mutations. "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," the authors write. They add that deficiencies in nutrient levels of B vitamins have been shown to be high in many western populations.

Paul Brennan, Ph.D., of the International Agency for Research on Cancer, Lyon, France, and colleagues conducted an investigation of B vitamins and methionine status based on serum samples from the European Prospective Investigation into Cancer and Nutrition (EPIC) cohort study, which recruited 519,978 participants from 10 European countries between 1992 and 2000, of whom 385,747 donated blood. By 2006, 899 lung cancer cases were identified and 1,770 control participants were individually matched by country, sex, date of birth, and date of blood collection.

After an analysis of the incidence rate of lung cancer within the entire EPIC cohort and adjusting for various factors, the researchers found a lower risk for lung cancer among participants with increasing levels of B6 (comparing the fourth vs. first quartile of B6 levels). A lower risk was also seen for increasing methionine levels. "Similar and consistent decreases in risk were observed in never, former, and current smokers, indicating that results were not due to confounding [factors that can influence outcomes] by smoking. The magnitude of risk was also constant with increasing length of follow-up, indicating that the associations were not explained by preclinical disease," the researchers write.

When participants were classified by median (midpoint) levels of serum methionine and B6, having above-median levels of both was associated with a lower lung cancer risk overall. A moderate lower risk was observed for increasing serum folate levels, although this association was restricted to former and current smokers, and was not apparent in never smokers.

"Our results suggest that above-median serum measures of both B6 and methionine, assessed on average 5 years prior **to disease onset, are associated with a reduction of at least 50 percent on the risk of developing lung cancer. An additional association for serum levels of folate was present, that when combined with B6 and methionine, was associated with a two-thirds lower risk of lung cancer,**" **the authors write.**

The researchers add that if their observations regarding serum methionine, B6, or both are shown to be causal, identifying optimum levels for reducing future cancer risk would appear to be appropriate.

**"Lung cancer remains the most common cause of cancer death in the world today and is likely to**

**remain so for the near future.** It is essential that for lung cancer prevention, any additional evidence about causality does not detract from the importance of reducing the numbers of individuals who smoke tobacco. With this in mind, it is important to recognize that a large proportion of lung cancer cases occur among former smokers, making up the majority in countries where tobacco campaigns have been particularly successful, and a non-trivial number of lung cancer cases occur also among never smokers, particularly among women in parts of Asia. Clarifying the role of B vitamins and related metabolites in lung cancer risk is likely therefore to be particularly relevant for former smokers and never smokers," the authors conclude.

**Public release date: 17-Jun-2010**

## **Probiotic therapy cuts risk of VAP in half for some in ICU**

Daily use of probiotics reduced ventilator-associated pneumonia (VAP) in critically ill patients by almost half, according to new research from Creighton University School of Medicine in Omaha, Nebraska.

The study was published on the American Thoracic Society's Web site ahead of the print edition of the American Journal of Respiratory and Critical Care Medicine.

It is estimated that VAP complicates the care of up to 30 percent of critical care patients receiving mechanical ventilation. "Patients with VAP have increased morbidity, mortality and hospital costs as well as prolonged intensive care unit (ICU) and hospital lengths of stay, and increased costs."

"We chose to study probiotics in this context because VAP is increasingly caused by pathogens associated with antimicrobial resistance and the supply of novel antibiotics is essentially nonexistent for the foreseeable future," said Lee E. Morrow, M.D., M.Sc., associate professor of medicine at Creighton University and lead author. "The implication is that novel methods of prevention must be our priority."

Although previous studies have suggested that probiotics might be effective in reducing risk of VAP, the results have been limited by the quality of their design.

"We were unsure what to expect with this trial," said Dr. Morrow. "Ultimately our hope was that upon completion of this 'proof of concept' study we could demonstrate two critically important points in a patient group at high risk for developing VAP: One, that properly selected probiotic agents can be safely administered to critically ill patients; and, two, when administered to the proper study population these agents also have efficacy in disease prevention. We felt that rigorously establishing these suppositions as facts was essential in order to continue to study probiotic agents in the intensive care unit setting."

Dr. Morrow and colleagues included 138 critically ill patients from a single center to receive either placebo or probiotic therapy. Patients in the treatment arm received  $2 \times 10^9$  colony-forming units of *Lactobacillus rhamnosus* twice daily—half the dose was administered as a slurry to the oropharynx and the remainder was given through nasogastric tube. After almost 5 years, the researchers found that daily use of probiotics not only decreased VAP infections by about 50 percent compared to placebo, but also reduced the amount of antibiotics needed in comparison to placebo-treated patients. This reduction in antibiotic consumption led to significantly fewer *Clostridium difficile* infections in patients given probiotics. No side effects attributable to the probiotics were observed.

Meta analysis of similar studies shows an overall reduction in VAP of 39 percent with probiotics.

"Collectively, these data suggest that *Lactobacillus* may represent a novel, inexpensive (retail price, \$2.13 per day for four tablets as administered per protocol), and non-antibiotic approach to prevention of nosocomial infections in properly selected ICU patients," said Dr. Morrow.

Because the patients were carefully selected to reduce the risk of iatrogenic infection, and over 90 percent of patients in the ICU were deemed ineligible for the study, it is important to note, Dr. Morrow cautioned, that these findings are not applicable to all ICU patients and probiotics should not be used for VAP

prophylaxis beyond the population that was included in this study.

"We strongly emphasize that these data should be viewed as preliminary in nature and cannot be generalized to the general ICU population given the prolonged period of enrolment, the rigorous inclusion criteria, the large number of exclusion criteria and the small number of patients included.

Other studies have found potentially harmful effects of probiotics, underscoring the need for meticulous monitoring of patients.

**"Probiotic prophylaxis of VAP using Lactobacillus rhamnosus GG appears safe and efficacious in a select population with a very high risk of VAP,"** concluded Dr. Morrow. "Ultimately, probiotics may fulfill a role in antimicrobial stewardship programs given the reductions in antibiotic consumption. Larger, multicenter clinical trials with more liberal inclusion criteria are needed to establish efficacy of probiotics and to allow for extrapolation to a larger at-risk population."

**Public release date: 17-Jun-2010**

## **Coffee or tea: enjoy both in moderation for heart benefits**

Study highlights:

**Both high and moderate amounts of tea are linked with reduced heart disease deaths.  
Moderate amounts of coffee are linked with reduced heart disease risk.  
Neither coffee nor tea consumption was associated with stroke risk in this Dutch study.**

DALLAS, June 18, 2010 —Coffee and tea drinkers may not need to worry about indulging – high and moderate consumption of tea and moderate coffee consumption are linked with reduced heart disease, according to a study published in Arteriosclerosis, Thrombosis, and Vascular Biology: Journal of the American Heart Association.

Researchers in The Netherlands found:

**Drinking more than six cups of tea per day was associated with a 36 percent lower risk of heart disease compared to those who drank less than one cup of tea per day.**

**Drinking three to six cups of tea per day was associated with a 45 percent reduced risk of death from heart disease, compared to consumption of less than one cup per day.**

And for coffee they found:

Coffee drinkers with a modest intake, two to four cups per day, had a 20 percent lower risk of heart disease compared to those drinking less than two cups or more than four cups.

Although not considered significant, moderate coffee consumption slightly reduced the risk of heart disease death and deaths from all causes.

Researchers also found that neither coffee nor tea consumption affected stroke risk.

"While previous studies have shown that coffee and tea seem to reduce the risk of heart disease, evidence on stroke risk and the risk of death from heart disease was not conclusive," said Yvonne T. van der Schouw, Ph.D., study senior author and professor of chronic disease epidemiology, Julius Center for Health Sciences and Primary Care, University Medical Center Utrecht, The Netherlands. "Our results found the benefits of drinking coffee and tea occur without increasing risk of stroke or death from all causes.

Van der Schouw and colleagues used a questionnaire to evaluate coffee and tea consumption among 37,514 participants. They followed the participants for 13 years for occurrences of cardiovascular disease and

death.

Study limitations included self-reported tea and coffee consumption, and the lack of specific information on the type of tea participants drank. However, black tea accounts for 78 percent of the total tea consumed in The Netherlands and green tea accounts for 4.6 percent. Coffee and tea drinkers have very different health behaviors, researchers note. Many coffee drinkers tend to also smoke and have a less healthy diet compared to tea drinkers.

Researchers suggest that the cardiovascular benefit of drinking tea may be explained by antioxidants. Flavonoids in tea are thought to contribute to reduced risk, but the underlying mechanism is still not known.

Co-authors are: J. Margot de Koning Gans, M.D.; Cuno S.P.M. Uiterwaal, M.D., Ph.D.; Joline W.J. Beulens, Ph.D.; Jolanda M.A. Boer, Ph.D.; Diederick E. Grobbee, M.D., Ph.D.; and W.M. Monique Verschuren, Ph.D. Author disclosures and funding sources are in the study.

**Public release date: 18-Jun-2010**

## **Vitamin D deficiency confirmed as common across a range of rheumatic conditions**

Recommended supplementation is not sufficient to normalise vitamin D levels in RA and osteoporosis patients

Rome, Italy, Friday 18 June 2010: Two separate studies have shown that vitamin D deficiency is common in patients with a range of rheumatic diseases, with over half of all patients having below the 'normal' healthy levels of vitamin D (48-145 nmol/L) in their bodies. **A further study assessing response to vitamin D supplementation found that taking the recommended daily dose did not normalise vitamin D levels in rheumatic disease patients.** The results of these three studies were presented today at EULAR 2010, the Annual Congress of the European League Against Rheumatism in Rome, Italy.

A UK study<sup>1</sup> of 180 patients aimed to assess mean levels of vitamin D in patients with inflammatory joint diseases, osteoarthritis and myalgia (muscle pain that, when experienced long term may be associated with nutritional deficiency). Data on vitamin D levels were gathered and results showed that 58% of individuals with a rheumatic condition had levels below that clinically considered to be 'sufficient' in healthy subjects (48-145 nmol/L).

An Italian study<sup>2</sup> of 1,191 RA patients aimed to determine a correlation between vitamin D deficiency and several different clinical measures of disease activity. Researchers found that, regardless of supplementation, levels of 25-hydroxyvitamin D (25(OH)D), (a standard clinical measure of vitamin D in the blood), were lower than healthy levels (<50 nmol/L) in 85% of the patients not taking a vitamin D supplement and in 60% of those taking 800 IU or more vitamin D daily as a supplement. In non-supplemented patients levels of 25(OH)D significantly correlated with three measures of disease activity - the Health Assessment Questionnaire Disability Index, (p=0.000) the Mobility Activities of Daily Living Score (p=0.000) and the Number of Swollen Joints count (p=0.000).

"We have seen in studies that vitamin D deficiency is common in patients with a range of rheumatic diseases, and our results have confirmed this using several clinically accepted measures of disease activity," said Dr. L. Idolazzi, of the Rheumatology Unit, University of Verona, Italy. "What we need to see now is a range of long term studies, which examine the clinical response of patients to vitamin D supplementation."

Furthermore, a third study undertaken in Italy<sup>3</sup> aimed to evaluate the affect of vitamin D supplementation in patients with inflammatory autoimmune disease (IAD) and non-inflammatory autoimmune disease

(NIAD). **Following supplementation, only 29% patients reached vitamin D levels greater than the level clinically considered to be 'sufficient' in healthy subjects**, with no significant differences in vitamin D levels observed between the IAD and NIAD groups.

"Whilst it is well known that hypovitaminosis D is often seen in patients with inflammatory autoimmune diseases, the effects of supplementation have not been fully investigated in this setting," said Dr. Pier Paolo Sainaghi of the Immuno-Rheumatology Clinic, A. Avogadro University of Eastern Piedmont, Novara, Italy and author of the third study. **"The results of our study show that daily 800-1,000 IU supplementation is not sufficient to normalise vitamin D levels in patients with rheumatologic or bone conditions. What is unclear is whether a higher dose would be more effective."**

#### Study designs and key statistics

The UK study<sup>1</sup> involved patients with a diagnosis of rheumatoid arthritis (RA), osteoporosis, or unexplained muscle pain, (total n=90, 30 from each group). These patients were matched with a control group of patients presenting with chronic back pain for a minimum of 6 months (n=90). The RA patient group registered median levels of vitamin D of 36 nmol/L (range 16-85 nmol/L, p=0.045) and in osteoporosis patients, these levels were slightly lower with a median value of 31 nmol/L (range 7-82 nmol/L, p=0.005). Patients with unexplained muscle pain had equally low median levels of vitamin D at 31 nmol/L (range 11-79 nmol/L, p= 0.008).

In the first Italian study<sup>2</sup> of 1,191 patients (85% women) from 22 rheumatology centres, researchers measured levels of 25(OH)D, alongside parameters of disease activity, calcium intake, sun exposure and bone mineral density. The association found by researchers between disease activity scores and vitamin D levels remained statistically significant when adjusted for both sun exposure and body mass index (BMI), both known risk factors for vitamin D deficiency. Significantly lower 25(OH)D levels were found in patients with active disease compared with those in disease remission (mean level 21.8 nmol/L 25(OH)D vs. 23.6 nmol/L respectively, p=0.057), and in those who were not responding to treatment compared to patients with a good response to treatment (20.5 nmol/L vs. 23.4 nmol/L p=0.020).

In the third Italian study<sup>3</sup>, 100 patients (43 with IAD and 57 with NIAD) received daily supplementation of 800-1000 IU of cholecalciferol (a form of vitamin D often used to fortify foods) over the course of six months. Abstract Numbers: FRI0509, SAT0093, SAT0506

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## **Cutting carbs is more effective than low-fat diet for insulin-resistant women**

**Obese women with insulin resistance lose more weight after three months on a lower-carbohydrate diet than on a traditional low-fat diet with the same number of calories, according to a new study. The results will be presented Saturday at The Endocrine Society's 92nd Annual Meeting in San Diego.**

"The typical diet that physicians recommend for weight loss is a low-fat diet," said the study's lead author, Raymond Plodkowski, MD, chief of endocrinology, nutrition and metabolism at the University of Nevada School of Medicine, Reno. "However, as this study shows, not all people have the same response to diets."

People with insulin resistance, a common precursor for Type 2 diabetes, metabolize carbohydrates, or "carbs," abnormally, which may affect their rate of weight loss. For them, Plodkowski said, "the lower-carb diet is more effective, at least in the short term."

At 12-weeks, the study funded by Jenny Craig and using prepared calorie-controlled meals as part of a behavioral weight loss program, found that the insulin resistant women on a lower-carb diet lost 3.4 pounds more than those on a low-fat diet.

Forty-five obese women between the ages of 18 and 65 years participated in the study, and all had insulin resistance, as found by fasting blood levels of insulin. The researchers randomly assigned the women to either a low-fat or lower-carb diet. The groups did not differ significantly in average body weight, the authors reported. On average, women in the low-fat diet group weighed 213 pounds, while women in the other group weighed 223 pounds.

The composition of the low-fat diet was 60 percent of calories from carbs, 20 percent from fat and 20 percent from protein. Although the lower-carb diet also had 20 percent of calories from protein, it had 45 percent from carbs and 35 percent from primarily unsaturated fats, such as nuts. Menus included a minimum of 2 fruits and 3 vegetable servings a day.

Use of prepared meals helped make the structured diets easier and more palatable for the dieters, according to Plodkowski. "We wanted to make this study real-world—anyone could follow this plan by making moderate changes as part of a healthy menu," he said.

**Both groups lost weight at each monthly weigh-in, but by 12 weeks, the insulin resistant group receiving the lower-carb diet lost significantly more weight, 19.6 pounds versus 16.2 pounds in the low-fat diet group – approximately 21 percent more on average.**

"These data have potential widespread applications for clinicians when counseling people with insulin resistance to help improve weight loss as part of a calorie-restricted diet," Plodkowski said. "They should at least initially lower their carbohydrate intake."

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## **Blueberry ameliorates hepatic fibrosis**

Conventional drugs used in the treatment of liver diseases inevitably have side effects. An increasing number of natural substances have been studied to explore if they have protective effects on the liver. Blueberries have unique effects on human retinal, brain and tumor cells, but reports about the effects of blueberries on liver diseases are lacking.

A research article to be published on June 7, 2010 in the World Journal of Gastroenterology addresses this question. The research team led by Ming-Liang Cheng, MD, from Department of Infectious Diseases, Guiyang Medical College, Guiyang, presented some data from their research on the effectiveness of blueberries on liver fibrosis induced in laboratory animals.

Their study showed that blueberries could reduce liver indices, serum levels of hyaluronic acid and alanine aminotransferase, and increase levels of superoxide dismutase and decrease levels of malondialdehyde in liver homogenates compared with the model group. Meanwhile, the stage of hepatic fibrosis was significantly weakened. Blueberries increased the activity of glutathione-S-transferase in liver homogenates and the expression of Nrf2 and Nqo1 compared with the normal group, but there was no significant difference compared with the model group.

The authors suggest that blueberry consumption is beneficial for hepatic diseases (including fibrosis).

**Public release date: 19-Jun-2010**

## **Poor control of diabetes may be linked to low vitamin D**

Vitamin D deficiency is highly prevalent in patients with Type 2 diabetes and may be associated with poor blood sugar control, according to a new study. The results will be

presented Saturday at The Endocrine Society's 92nd Annual Meeting in San Diego.

"This finding supports an active role of vitamin D in the development of Type 2 diabetes," said study co-author Esther Krug, MD, an assistant professor of medicine at The Johns Hopkins University School of Medicine and an endocrinologist at Sinai Hospital, Baltimore.

Krug and her colleagues reviewed the medical charts of 124 patients with Type 2 diabetes who came to an endocrine outpatient clinic for specialty care from 2003 to 2008. Patients' age ranged from 36 to 89 years. All patients had a single measurement of their serum 25-hydroxyvitamin D levels as part of their evaluation at the clinic. The researchers divided the patients into quartiles based on vitamin D level.

**Despite receiving regular primary care visits before referral to the endocrine clinic, 91 percent of patients had either vitamin D deficiency** (defined as a level below 15 nanograms per deciliter, or ng/dL) or insufficiency (15 to 31 ng/dL), the authors reported. Only about 6 percent of patients were taking vitamin D supplements at their first visit.

Additionally, the investigators found an inverse relationship between the patients' blood levels of vitamin D and their hemoglobin A1c value, a measure of blood sugar control over the past several months. Lower vitamin D levels were discovered in patients with higher average blood sugars as measured by HbA1c, Krug said. Compared with whites, blacks had a higher average A1c and lower average vitamin D level.

"Since primary care providers diagnose and treat most patients with Type 2 diabetes, screening and vitamin D supplementation as part of routine primary care may improve health outcomes of this highly prevalent condition," she said.

**Public release date: 21-Jun-2010**

## **Early life exposure to BPA may affect testis function in adulthood**

Exposure to environmental levels of the industrial chemical bisphenol A, or BPA, in the womb and early life may cause long-lasting harm to testicular function, according to a new study conducted in animals. The results are being presented Monday at The Endocrine Society's 92nd Annual Meeting in San Diego.

"We are seeing changes in the testis function of rats after exposure to BPA levels that are lower than what the Food and Drug Administration and Environmental Protection Agency consider safe exposure levels for humans," said Benson Akingbemi, PhD, the study's lead author and an associate professor at Auburn (Ala.) University. "This is concerning because large segments of the population, including pregnant and nursing mothers, are exposed to this chemical."

Many hard plastic bottles and canned food liners contain BPA, as do some dental sealants. BPA acts in a similar manner as the female sex hormone estrogen and has been

linked to female infertility. This chemical is present in placenta and is able to pass from a mother into her breast milk. In their study of the male, Akingbemi and colleagues saw harmful effects of BPA at the cellular level, specifically in Leydig cells. These cells in the testis secrete testosterone, the main sex hormone that supports male fertility. After birth, Leydig cells gradually acquire the capacity for testosterone secretion, Akingbemi explained.

The process of testosterone secretion was decreased in male offspring of female rats that received BPA during pregnancy and while nursing. **The mothers were fed BPA in olive oil at a dose of either 2.5 or 25 micrograms of BPA per kilogram of body weight. Akingbemi said this is below the daily upper limit of safe exposure for humans, which federal guidelines currently put at 50 micrograms per kilogram of body weight.** A control group of pregnant rats received olive oil without BPA. Male offspring, after weaning at 21 days of age, received no further exposure to BPA.

Using a combination of analytical methods, the investigators studied the development of Leydig cells in male offspring. The capacity for testosterone secretion was assessed at 21, 35 and 90 days of age. The amount of testosterone secreted per Leydig cell was found to be much lower in male offspring after early-life exposure to BPA than in offspring from control unexposed animals.

**"Although BPA exposure stopped at 21 days of age, BPA's effects on Leydig cells, which were seen immediately at the end of exposure and at 35 days, remained apparent until 90 days of age, when the rats reached adulthood,"** Akingbemi said.

"Therefore, the early life period is a sensitive window of exposure to BPA and exposure at this time may affect testis function into adulthood."

**Public release date: 23-Jun-2010**

## **Polio research gives new insight into tackling vaccine-derived poliovirus**

A vaccine-derived strain of poliovirus that has spread in recent years is serious but it can be tackled with an existing vaccine, according to a new study published today in the New England Journal of Medicine.

**Vaccine-derived polioviruses can emerge on rare occasions in under-immunised populations, when the attenuated virus contained in a vaccine mutates and recombines with other viruses, to create a circulating vaccine-derived strain.**

The researchers behind today's study say their findings highlight the importance of completing polio eradication. They also say that should wild-type poliovirus be eradicated, routine vaccination with oral polio vaccines will need to cease, in order to prevent further vaccine-derived strains of the virus from emerging.

The study was carried out by researchers from the Medical Research Council Centre for Outbreak Analysis and Modelling at Imperial College London, working with the

Government of Nigeria and the World Health Organization (WHO) research teams.

Poliovirus is highly infectious and primarily affects children under five years of age. Around one in 200 of the people infected with polio develop permanent paralysis, which can be fatal.

Polio was virtually wiped out by the early 2000s following a major vaccination drive by the Global Polio Eradication Initiative, but since then the number of cases of paralysis reported has plateaued, remaining roughly constant at between one and two thousand each year from 2003 to 2009, dropping only recently in 2010.

The first reported polio outbreak resulting from a circulating vaccine-derived poliovirus, known as a cVDPV, occurred in Hispaniola in 2000. Prior to today's study, there was little evidence available about the severity and potential impact of this kind of poliovirus.

Although billions of doses of oral vaccine have been distributed in the last decade, just 14 cVDPV outbreaks have been reported, affecting 15 countries. These outbreaks have usually been limited in size.

For the new study, researchers looked at the largest recorded outbreak of a cVDPV to date, which began to circulate in Nigeria in 2005. The authors examined data from 278 children paralysed by this cVDPV, and compared them with children paralysed by wild-type poliovirus in the country. Their analysis showed that this serotype 2 cVDPV is as easily transmitted and likely to cause severe disease as wild-type poliovirus of the same serotype.

The study also shows that vaccination with trivalent OPV, one of the main types of vaccine currently used to combat polio, is highly effective in preventing paralysis by this serotype 2 cVDPV.

The research shows that it is even more effective against cVDPV than against the wild-type polioviruses that are currently circulating, which can also be targeted with a different vaccine.

The new findings mean that it is particularly vital that efforts to vaccinate children with trivalent OPV continue in Nigeria and neighbouring countries, to protect children against all strains of polio. The scientists hope their findings will help countries to devise the right vaccine strategies to eradicate polio.

Helen Jenkins, the lead author of the study from the Medical Research Council Centre for Outbreak Analysis and Modelling at Imperial College London, said: "Our research shows that vaccine-derived polioviruses must be taken seriously and that we have the right tools to tackle them. We've had a lot of success against polio in the past and we're optimistic that ultimately we should be able to eradicate it completely.

"However, our study shows that we can't be complacent about the virus. It's still vital for

us to protect children from this dangerous and debilitating disease and we have to make sure we continue to vaccinate as many children as possible in affected countries for as long as wild-type poliovirus continues to circulate," added Ms Jenkins.

Senior study author Dr Nicholas Grassly, also from the Medical Research Council Centre for Outbreak Analysis and Modelling at Imperial College London, added: "There has been some debate about the significance of circulating vaccine-derived polioviruses for the eradication initiative. **Our research shows these viruses can be as pathogenic and transmissible as wild-type polioviruses and outbreaks must be responded to with just as much vigour.**"

Dr Bruce Aylward, Director of the Global Polio Eradication Initiative at WHO, added: "These new findings suggest that if cVDPVs are allowed to circulate for a long enough time, eventually they can regain a similar capacity to spread and paralyse as wild polioviruses. This means that they should be subject to the same outbreak response measures as wild polioviruses. These results also underscore the need to eventually stop all OPV use in routine immunization programmes after wild polioviruses have been eradicated, to ensure that all children are protected from all possible risks of polio in future."

**Public release date: 23-Jun-2010**

## **Study demonstrates pine bark naturally reduces hay fever symptoms**

Research shows Pycnogenol decreases nasal and ocular symptoms in allergic rhinitis patients

HOBOKEN, N.J. (June 23, 2010) – An estimated 60 million people in the U.S. are affected by allergic rhinitis, commonly known as hay fever, according to the American Academy of Allergy Asthma and Immunology. Hay fever is an allergic inflammation of the nasal airways that causes itching, swelling, mucus production, hives and rashes. A study published in the June 14, 2010 issue of *Phytotherapy Research* demonstrates Pycnogenol® (pic-noj-en-all), an antioxidant plant extract derived from the bark of the French maritime pine tree, substantially improves the symptoms of hay fever.

"Allergic rhinitis is often mistakenly believed to be a trivial health problem, while people suffering from hay fever may disagree as they experience a dramatic impairment to their quality of life," said Dr. Malkanthi Evans Scientific Director KGK Synergize Inc., a lead researcher on the study. "This study confirmed that taking Pycnogenol® naturally relieves eye and nasal symptoms of hay-fever patients owing to lower pollen-specific antibodies, particularly for ocular and nasal distress."

In a randomized, double-blind, placebo-controlled study conducted by KGK Synergize, Inc., 60 subjects between the ages of 18 and 65 began treatment three to eight weeks prior to the onset of birch allergy season in Ontario, Canada. All subjects tested positive for birch pollen allergies, a seasonal trigger of hay fever, as determined by skin prick tests.

Patients were assigned to a Pycnogenol® group or placebo group according to a computer-generated, randomized schedule. Neither the patient, the investigator nor research staff was informed to which test order the subjects were **assigned. Subjects were instructed to take either one 50 mg Pycnogenol® tablet or one placebo tablet twice daily, once in the morning and once in the evening throughout the allergy season.** Patients were allowed to use non-prescription antihistamines as needed and recorded usage and dosage in treatment journals. **The study was approved by an ethical committee as well as the "Health Canada" authorities.**

Blood was collected before and after treatment throughout the entire birch pollen season for the measurement of birch specific IgE antibodies. Upon recognition of a specific allergen the IgE class of antibodies stimulates the release of histamine, an inflammatory mediator responsible for the hay-fever symptoms. During exposure to pollen allergic people develop higher levels of the corresponding IgE antibody, which goes along with increasing hay-fever symptoms. **Comparison of birch specific IgE levels from the start of the trial and the end of allergy season showed an increase of 31.9 percent in the placebo group but only 19.4 percent in the Pycnogenol® group.**

Subjects were instructed to rate nasal and eye symptoms daily by means of a self-administered questionnaire, recording values in their treatment journals. These resemble problems well known to people affected by hay-fever: burning, itchy, watering or tearing eyes, redness, sneezing and stuffy, runny or itchy nose. All nasal and eye symptoms were scored with values ranging from "zero" (symptoms absent) to a maximum of "three" (severe, symptoms completely preventing normal activity). Throughout the birch pollen seasons around mid of April until end of May, the total average nasal and eye symptom score was lower in the Pycnogenol® group than in the placebo group. **A detailed analysis showed that Pycnogenol® was more effective the earlier patients began taking the product prior to the onset of the exposure to birch pollen. The researchers speculate that a lag-time of at least five weeks prior to pollen exposure is required for Pycnogenol® to defy hay-fever symptoms. Subjects taking Pycnogenol® seven weeks before onset of the birch season required very little non-prescription antihistamine medication (12.5%) compared with subjects taking the placebo (50%).**

"For the many people seeking alternatives to conventional treatment for allergic rhinitis Pycnogenol® may represent an effective and completely natural solution, void of any side-effects" said Evans.

Previous studies have revealed Pycnogenol® to favorably affect patients suffering from allergies. Two earlier clinical trials showed that Pycnogenol® improves symptoms and breathing ability of asthma patients. Asthma is likewise triggered by airborne allergens and Pycnogenol® was demonstrated to significantly decrease leukotriene levels, an inflammatory mediator involved in asthma and hay fever alike. Human pharmacologic studies have pointed to a general anti-inflammatory potency of Pycnogenol®.

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**These reports are done with the appreciation of all the Doctors, Scientist, and other Medical Researchers who sacrificed their time and effort. In order to give people the ability to empower themselves. Without the base aspirations for fame, or fortune.  
Just honorable people, doing honorable things.**