



The Vitamin & Herb Stores

# #78

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**Public release date: 16-Mar-2010**

### **Cloves are the best natural antioxidant**

Using spices eaten in the Mediterranean diet as natural antioxidants is a good way forward for the food industry, given the beneficial health effects of these products. This has been shown by researchers from the Miguel Hernández University (UMH), who have put the clove in first place.

Researchers from the Miguel Hernández University have identified cloves (*Syzygium aromaticum*) as the best antioxidant spice, due to the fact they contain high levels of phenolic compounds, as well as having other properties.

**"Out of the five antioxidant properties tested, cloves had the highest capacity to give off hydrogen, reduced lipid peroxidation well, and was the best iron reducer"**, Juana Fernández-López, one of the authors of the study and a researcher at the UMH, tells SINC.

As a result, the research study published in the latest issue of the Flavour and Fragrance Journal ranks this spice as the best natural antioxidant.

"The results show that use of the natural oxidants occurring in spices used in the Mediterranean diet, or their extracts, is a viable option for the food industry, as long as the organoleptic characteristics of the food product are not affected", adds the researcher.

"These substances exhibit high antioxidant capacity, and could have beneficial effects for health", says the researcher

The team also evaluated the antioxidant effect of the essential oils from other spices used in the Mediterranean diet – oregano (*Origanum vulgare*), thyme (*Thymus vulgaris*), rosemary, (*Rosmarinus officinalis*) and sage (*Salvia officinalis*).

The objective of the study is to enable these spices to be incorporated into food products (above all meat products) as natural antioxidants.

Changing the food industry

"Lipid oxidation is one of the main reasons for foods deteriorating, and causes a significant reduction in their nutritional value, as well as loss of taste", says Fernández-López.

These alterations lead to a reduction in the useful lifespan of the food product. To avoid such deterioration, the food industry uses synthetic antioxidants in its products. However, as these are chemical compounds, questions have been raised about their potential toxicity and side-effects.

As a result, there is a growing interest in using plant-based products (spices, aromatic and medicinal plants) with potential antioxidant activity, in order to replace the synthetic antioxidants with "natural" substances.

Ralph's Note - Curious if this may help those with hemochromatosis.

**Public release date: 16-Mar-2010**

## **Media reports may paint overly optimistic view of cancer**

Newspaper and magazine reports about cancer appear more likely to discuss aggressive treatment and survival than death, treatment failure or adverse events, and almost none mention end-of-life palliative or hospice care, according to a report in the March 22 issue of Archives of Internal Medicine, one of the JAMA/Archives journals.

The report is one of three in the issue being released early to coincide with a JAMA media briefing on cancer in Washington, D.C. The March issues of Archives of Pediatrics & Adolescent Medicine, Archives of Neurology, Archives of Ophthalmology, Archives of Dermatology, Archives of Surgery, Archives of Facial Plastic Surgery and Archives of Otolaryngology–Head & Neck Surgery have also published articles on this topic.

**It is estimated that one in two men and one in three women will be diagnosed with cancer in their lifetime, according to background information in the article. Of these, approximately half will die of cancer or related complications; more than half a million Americans are expected to die of cancer every year.** "These figures have given cancer a prominent place in news reporting," the authors write.

Jessica Fishman, Ph.D., and colleagues at the University of Pennsylvania, Philadelphia, conducted a content analysis of cancer news reporting between 2005 and 2007 in eight large U.S. newspapers and five national magazines. Of 2,228 cancer-related articles that appeared, a random sample of 436 was selected (312 from newspapers and 124 from magazines). Trained coders determined the proportion of articles devoted to various cancer-related topics.

The articles were most likely to focus on breast cancer (35.1 percent) or prostate cancer (14.9 percent), and 87 (20 percent) discussed cancer in general. A total of 140 (32.1 percent) focused on individuals surviving or being cured of cancer, whereas 33 (7.6 percent) focused on one or more patients who were dying or had died of cancer. Ten articles (2.3 percent) focused on both survival and death.

"It is surprising that few articles discuss death and dying considering that half of all patients diagnosed as having cancer will not survive," the authors write. "The findings are also surprising given that scientists, media critics and the lay public repeatedly criticize the news for focusing on death."

**In addition, few articles (57, or 13.1 percent) reported that aggressive cancer treatments can fail to extend life or cure the disease, or that some cancers are incurable. Less than one-third of the articles (131, or 30 percent) mentioned adverse events associated with cancer treatments, such as nausea, pain or hair loss.**

Most articles (249, or 57.1 percent) discussed aggressive treatments exclusively, but almost none (two, or 0.5 percent) discussed end-of-life care only and only 11 (2.5 percent) discussed both. "For many patients with cancer, it is important to know about palliative and hospice care because this information can help them make decisions that realistically reflect their prognosis and the risks and potential benefits of treatment," the authors write.

After adjusting for article length, there were no differences between magazine and newspaper articles in regards to any of these factors, the authors note.

"How often should the news media discuss treatment failure, adverse events, end-of-life care and death and dying? Although there is no quantifiable answer, the same educational goals that ideally drive news coverage of cancer treatment and survival should also compel news organizations to address these topics," the authors conclude. "The media routinely report about aggressive treatment and survival presumably because cancer news coverage is relevant to a large portion of the population, and, for the same reason,

similar attention should be devoted to the alternatives."

Ralph's Note- I usually do not like printing negative articles, but this is important. Primarily patients are often discouraged from researching the treatments themselves. Which can lead them to discovering promising supporting or optional therapies. Instead of the predominant false belief that the current industrial cancer treatments are the best that science has to offer.

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

## **Selenium protects men against diabetes**

The role of selenium in diabetes has been controversial, with some studies suggesting that it raises diabetes risk and others finding that it is protective. Now, research published in BioMed Central's open access journal Nutrition and Metabolism, has shown that, for men, high plasma selenium concentrations are associated with a lower occurrence of dysglycemia.

Tasnime Akbaraly, from the University of Montpellier, worked with a team of researchers to follow 1162 healthy French men and women for nine years, monitoring plasma selenium concentrations and incidence of dysglycemia. She said, "Our results showed that for French elderly males, having plasma selenium concentrations in the top tertile of the population distribution (1.19-1.97  $\mu\text{mol/L}$ ) was significantly associated with a lower risk of developing dysglycemia over the following nine years".

During the study period, 127 new cases of dysglycemia occurred, of which 70 were in men and 57 in women. According to Akbaraly, "The reason we observed a protective effect of selenium in men but not in women is not completely clear, but might be attributed to women being healthier at baseline, having better antioxidant status in general and possible differences in how men and women process selenium".

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

## **Omega 3 curbs precancerous growths in those prone to bowel cancer**

Eicosapentaenoic acid reduces rectal polyp number and size in familial adenomatous polyposis  
A purified form of an omega 3 cuts the number and size of precancerous bowel growths (polyps) in people whose genetic make-up predisposes them to bowel cancer, finds research published ahead of print in the journal Gut.

**Furthermore, this particular omega 3 (eicosapentaenoic acid or EPA) seems to be as effective as the prescription medicine used to treat familial bowel polyps, but without the associated cardiovascular side effects.**

The researchers base their findings on 55 patients, all of whom had the inherited genetic mutation that prompts the development of precancerous polyps in the bowel - known as familial adenomatous polyposis, or FAP for short.

People with FAP are at significantly increased risk of developing bowel cancer and require surgery to remove large sections of their bowel. Subsequently, some also need regular monitoring.

All 55 patients had previously undergone surgery and were being monitored by endoscopy - a procedure involving a camera on the end of a flexible tube passed through the rectum.

Twenty eight of the patients were randomly assigned to six months of treatment with 2 g daily of a new highly purified form of the omega 3 polyunsaturated fatty acid (PUFA) EPA. The other 27 were given the same amount of a dummy treatment (placebo).

The EPA capsules were enteric coated to prevent the indigestion that can sometimes be associated with omega 3 supplements. Dietary omega 3 PUFA mainly comes from oily fish, such as salmon, mackerel, and herring.

An assessment of the number and size of polyps at the beginning and end of the six month study period revealed significant differences between the two groups of patients.

**The number of polyps increased by almost 10% among those treated with the placebo, but fell by more than 12% among those treated with the EPA capsules, representing a difference of almost 22.5%.**

This was still clinically significant, even after taking account of influential factors, such as age and sex.

**Similarly, polyp size increased by more than 17% among those in the placebo group but fell by more than 12.5% in those taking the EPA capsules, representing a difference of just under 30%.**

The authors note that the effects of EPA were similar to those produced by celecoxib, which is used to help curb the growth of new and existing polyps in patients with FAP.

The use of celecoxib has been associated with harmful cardiovascular side effects in older patients. In this study, EPA produced few side effects and these were no more common than those produced by the placebo.

This formulation of omega 3 might also help to prevent bowel cancer in people with the common non-familial form of bowel polyps, suggest the authors.

As omega 3 PUFAs in general are safe and even good for cardiovascular health, EPA could be especially suitable for older patients at risk of both bowel cancer and heart disease, they say.

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

## **Long neglected nutritional training for doctors at all levels needed now**

Nutritional training in gastroenterology

The profession must take advantage of changes in medical education to ensure that all health professionals, but especially gut specialists, are given adequate training in nutrition, urge Dr Penny Nield and colleagues, in the launch issue of *Frontline Gastroenterology*,\* the new quarterly companion journal to *Gut*.

**Despite its importance to every area of clinical practice - and not just gastroenterology - and a range of policy documents advocating a solid grounding in nutrition dating back several years, it is an area that has "long been notoriously patchy at both undergraduate and postgraduate levels," say the authors from St George's Hospital, London.**

Technological advances in the diagnosis and treatment of disease and the emphasis on measurable outcomes have conspired to create "organ specific evidence based medicine" within which "the study, education, and treatment of nutrition in health and disease do not sit comfortably," they write.

**The evidence shows that healthcare professionals in general know little about how to assess and manage poor nutrition,** and gastroenterologists in particular need to be able to provide advice and expertise in general nutrition, artificial nutrition support, and intestinal failure, they argue.

With changes in specialty training and the shift towards workplace based training and assessment, formal nutritional training in gastroenterology has now become not only feasible but also desirable, they suggest.

"It is to be hoped that the requirement for more standardised and structured core nutrition training will be recognised and included in the revised curriculum for gastroenterology to be published in 2010," they conclude.

Ralph's Note - This is a very positive recognition.

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

## **Pesticide chlorpyrifos is linked to childhood developmental delays**

March 18, 2010—Exposure to the pesticide chlorpyrifos—which is banned for use in U.S. households but is still widely used throughout the agricultural industry—is associated with early childhood developmental delays, according to a study by researchers at Columbia University's Mailman School of Public Health.

Findings of the study, "Chlorpyrifos Exposure and Urban Residential Environment Characteristics as Determinants of Early Childhood Neurodevelopment," are online in the American Journal of Public Health.

The study examined the association between exposure to the pesticide and mental and physical impairments in children in low-income areas of New York City neighborhoods in the South Bronx and Northern Manhattan. Chlorpyrifos was commonly used in these neighborhoods until it was banned for household use by the U.S. Environmental Protection Agency (EPA) in 2001. **It is still used as an agricultural pesticide on fruits and vegetables.** The EPA registration of chlorpyrifos for agricultural use is currently under review, with a public comment period scheduled for the coming months.

"This study helps to fill in the gaps about what is known about the effect of the pesticide chlorpyrifos on the development of young children by showing that there is a clear-cut association between this chemical and delayed mental and motor skill development in children even when there are other potentially harmful environmental factors present," said Gina Lovasi, PhD, lead author and Mailman School of Public Health assistant professor of epidemiology. Dr. Lovasi conducted the research as a Robert Wood Johnson Foundation Health & Society Scholar at the Mailman School.

As in previous research in the same study population, published in *Pediatrics* in 2006, this study controlled for gender, gestational age at birth, ethnicity, maternal education, maternal intelligence quotient, and exposure to secondhand smoke during pregnancy. What this study adds is that building dilapidation and community-level factors such as percentage of residents living in poverty do not explain the association. After controlling for these factors, the research indicates that high chlorpyrifos exposure (greater than 6.17 pg/g in umbilical cord blood at the time of birth) was associated with a 6.5-point decrease in the Psychomotor Development Index score and a 3.3-point decrease in the Mental Development Index score in 3-year-olds. "These associations remained statistically significant and similar in magnitude after accounting for dilapidated housing and neighborhood characteristics," noted Dr. Lovasi.

Of the 266 children included as study participants, 47 percent were male, 59 percent were Hispanic of Dominican descent and 41 percent were Black. In addition, children living in neighborhoods with the highest levels of poverty also had lower test scores—a finding that was not affected by pesticide exposure.

Young children have greater exposure to pesticides than adults, since they tend to play on the floor or in the grass—areas where pesticides are commonly applied—and to place their hands and objects in their mouths. Pregnant women exposed to pesticides can also expose their unborn children to the chemicals.

**Those who advocate for further restrictions on the use of pesticides, including chlorpyrifos, contend that such chemicals drift from treated agricultural fields to nearby yards, homes and schools, placing pregnant women and children at risk.**

"Although this pesticide has been banned for residential use in the United States, chlorpyrifos and other

organophosphorus insecticides are still commonly used for a variety of agricultural purposes," said study co-author Virginia Rauh, ScD, professor of clinical population and family health, and co-deputy director for the Columbia Center for Children's Environmental Health at the Mailman School of Public Health. "We hope that the results of this study, further demonstrating the neurotoxicity of chlorpyrifos under a range of community conditions, may inform public health professionals and policy-makers about the potential hazards of exposure to this chemical for pregnant women and young children."

Ralph's Note - It is still used on fruits and vegetables...Go organic!!!

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

## **Do financial interests result in positive results in scientific research?**

Research: Association between industry affiliation and position on cardiovascular risk with rosiglitazone: A cross-sectional systematic review

Virtually all (94%) of the scientific authors who provided positive results for the anti-diabetic drug rosiglitazone had financial relationships with pharmaceutical companies, according to research published on bmj.com today.

While the study acknowledges that financial relationships may not necessarily be the reason for positive research results, it concludes that further reform is needed to ensure trust in scientific work.

In 2007, a large scale review of rosiglitazone showed that use of the drug led to a significant increased risk of heart attacks. This in turn led to further studies and commentaries by scientists about the safety of rosiglitazone. Policies were also developed to encourage disclosure of such financial conflicts of interest.

But whether these policies have made any impact on the association between financial conflicts of interest and views expressed in scientific reports is still unknown.

So researchers at the Mayo Clinic in the USA assessed over 200 articles on rosiglitazone to explore a possible link between authors' financial conflicts of interest and their views on the safety of the drug.

They found that almost half of the study authors (45%) had financial conflicts of interest and almost a quarter of these (23%) did not disclose this information. Three studies included in the latter group published a statement declaring no conflicts of interest.

**Almost all (94%) authors who had favourable views on the safety of rosiglitazone were more likely to have a financial conflict of interest with a pharmaceutical company than were authors who had unfavourable views.**

The researchers conclude by saying: "Disclosure rates for financial conflicts of interest were unexpectedly low, and there was a clear and strong link between the orientation of authors' expressed views on the rosiglitazone controversy and their financial conflicts of interest with pharmaceutical companies."

"These findings, while not necessarily causal, underscore the need for further progress in reporting in order for the scientific record to be trusted," they add.

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

## **Seaweed to tackle rising tide of obesity**

Seaweed could hold the key to tackling obesity after it was found it reduces fat uptake by more than 75 per cent, new research has shown.

Now the team at Newcastle University are adding seaweed fibre to bread to see if they can develop foods that help you lose weight while you eat them.

**A team of scientists led by Dr Iain Brownlee and Prof Jeff Pearson have found that dietary fibre in one of the world's largest commercially-used seaweed could reduce the amount of fat absorbed by the body by around 75 per cent.**

The Newcastle University team found that Alginate – a natural fibre found in sea kelp – stops the body from absorbing fat better than most anti-obesity treatments currently available over the counter.

Using an artificial gut, they tested the effectiveness of more than 60 different natural fibres by measuring the amount of fat that was digested and absorbed with each treatment.

Presenting their findings today at the American Chemical Society Spring meeting in San Francisco, Dr Brownlee said the next step was to recruit volunteers and study whether the effects they have modelled in the lab can be reproduced in real people, and whether such foods are truly acceptable in a normal diet.

"The aim of this study was to put these products to the test and our initial findings are that alginates significantly reduce fat digestion," explains Dr Brownlee.

"This suggests that if we can add the natural fibre to products commonly eaten daily - such as bread, biscuits and yoghurts – up to three quarters of the fat contained in that meal could simply pass through the body.

"We have already added the alginate to bread and initial taste tests have been extremely encouraging. Now the next step is to carry out clinical trials to find out how effective they are when eaten as part of a normal diet."

The research is part of a three year project being funded by the Biotechnology and Biological Sciences Research Council. It addresses the new regulations set out by the European Food Safety Authority that any health claims made on a food label should be substantiated by scientific evidence.

"There are countless claims about miracle cures for weight loss but only a few cases offer any sound scientific evidence to back up these claims," explains Dr Brownlee.

**Alginates are already commonly used at a very low level in many foods as thickeners and stabilisers and when added to bread as part of a blind taste test, Dr Brownlee said the alginate bread actually scored higher for texture and richness than a standard white loaf.**

"Obesity is an ever-growing problem and many people find it difficult to stick to diet and exercise plans in order to lose weight," explained Dr Brownlee.

"Alginates not only have great potential for weight management - adding them to food also has the added advantage of boosting overall fibre content."

**Public release date: 22-Mar-2010**

## **Real-world health nuts: First evidence that walnuts may help fight prostate cancer**

SAN FRANCISCO, March 22, 2010 — **Scientists in California are reporting for the first time that walnuts — already renowned as a rich source of omega-3 fatty acids that fight heart disease — reduce the size and growth rate of prostate cancer in test animals. They described their findings**

today at the 239th National Meeting of the American Chemical Society (ACS), being held here this week.

"Walnuts should be part of a prostate-healthy diet," said Paul Davis, Ph.D., who headed the study. He is with the University of California-Davis. "They should be part of a balanced diet that includes lots of fruits and vegetables."

More than 190,000 men in the United States will get a diagnosis of prostate cancer in 2010, making it the most common non-skin cancer. It claims about 27,000 lives annually. Evidence suggests that diet is among the largest factors that influence a man's risk for developing prostate cancer. Studies suggest that tomatoes and pomegranate juice, for instance, may reduce the risk.

Davis and colleagues note that walnuts are a rich source of healthful substances, including omega-3 fatty acids found in more expensive foods like salmon; gamma tocopherol (a form of vitamin E), polyphenols, and antioxidants. The scientists recently showed that walnuts could help fight heart disease by reducing levels of endothelin, a substance that increases inflammation of blood vessels. **This effect was in addition to walnuts reducing levels of "bad" cholesterol (low-density lipoprotein cholesterol, or LDL) in the blood. Knowing that people with prostate cancer have elevated levels of endothelin, the scientists decided to test whether eating walnuts could be beneficial in prostate cancer.**

"We decided to use whole walnuts in the diet because when a single component of a food linked to cancer prevention has been tested as a supplement, that food's cancer-preventative effects disappear in most cases," Davis said.

**The scientists fed lab mice genetically programmed to develop prostate cancer the equivalent of about 2.5 ounces of walnuts per day — equivalent to 14 shelled nuts — for 2 months. A control group of mice got the same diet except with soybean oil. The walnut-fed mice developed prostate cancers that were about 50 percent smaller than the control mice. Those cancers also grew 30 percent slower.**

The scientists reported that the walnut-fed mice had lower levels of insulin-like growth factor-1. High levels of the protein may increase the risk of developing prostate cancer in the first place. In an effort to understand what walnuts were doing, the scientists used gene chip technology to look for changes in gene levels in the tumor itself as well as the mouse's liver. They found that walnuts also had large, beneficial effects in both tumor and liver on genes that have been shown to be involved in controlling tumor growth, the scientists noted.

**Public release date: 22-Mar-2010**

## **Radiotherapy can cause lasting vascular disease**

For an as yet unknown reason, cancer radiotherapy can increase the risk of cardiovascular disease later in life, a problem that is growing as more and more people survive their cancer diagnosis. New research from Karolinska Institutet now suggests that sustained inflammation induced by post-radiotherapy changes in the gene expression in the arteries could be the cause.

**Epidemiological studies have shown that a course of radiotherapy increases the risk of cardiovascular disease in the same part of the body; for example, myocardial infarction after left-side breast cancer treatment, or stroke after the treatment of head and neck or brain tumours. Scientists know very little, however, about the biological causes of these serious side-effects, which often do not appear until many years following treatment.**

"Studies have been hampered by the fact that the disease process is so slow," says Martin Halle, researcher at Karolinska Institutet. "Cell studies and animal studies are best suited to the more immediate effects, and studies on human subjects have been ruled out for ethical reasons."

By studying autografts that have been carried out after cancer, Martin Halle and colleagues have now for the first time managed to study the long-term effects of radiotherapy on human blood vessels. This type of autograft involves the transplantation of skin, muscle or bone tissue from one part of a patient's body to reconstruct defects that arise after the removal of a tumour in another, often irradiated, part. By harvesting biopsies from previously irradiated branches of the carotid arteries and non-irradiated arteries from grafts, the researchers have been able to compare the difference in global gene expression between irradiated and non-irradiated arteries from the same patient at the same time.

**They found that the irradiated arteries showed signs of chronic inflammation and an increase in activity of Nuclear Factor- kappaB (NF-kappaB), a transcription factor known for playing a key part in the development of atherosclerosis. The greater inflammatory gene expression was visible for several years after irradiation, and might, the researchers believe, explain why cancer patients can suffer cardiovascular disease many years after radiotherapy.**

"Hopefully, these findings will one day help medicine to mitigate the side effects by administering radiotherapy in combination with an anti-inflammatory treatment," says Dr Halle.

The importance of the results is underscored by the publication of an explanatory commentary in the journal's editorial.

**Public release date: 22-Mar-2010**

## **Sweet problem: Princeton researchers find that high-fructose corn syrup prompts considerably more weight gain**

Posted March 22, 2010; 10:00 a.m. share | e-mail | printby Hilary ParkerA Princeton University research team has demonstrated that all sweeteners are not equal when it comes to weight gain: Rats with access to high-fructose corn syrup gained significantly more weight than those with access to table sugar, even when their overall caloric intake was the same.

In addition to causing significant weight gain in lab animals, long-term consumption of high-fructose corn syrup also led to abnormal increases in body fat, especially in the abdomen, and a rise in circulating blood fats called triglycerides. The researchers say the work sheds light on the factors contributing to obesity trends in the United States.

"Some people have claimed that high-fructose corn syrup is no different than other sweeteners when it comes to weight gain and obesity, but our results make it clear that this just isn't true, at least under the conditions of our tests," said psychology professor Bart Hoebel, who specializes in the neuroscience of appetite, weight and sugar addiction. "When rats are drinking high-fructose corn syrup at levels well below those in soda pop, they're becoming obese -- every single one, across the board. Even when rats are fed a high-fat diet, you don't see this; they don't all gain extra weight."

A Princeton University research team, including (from left) undergraduate Elyse Powell, psychology professor Bart Hoebel, visiting research associate Nicole Avena and graduate student Miriam Bocarsly, has demonstrated that rats with access to high-fructose corn syrup -- a sweetener found in many popular sodas -- gain significantly more weight than those with access to water sweetened with table sugar, even when they consume the same number of calories. The work may have important implications for understanding obesity trends in the United States.

In results published online March 18 by the journal *Pharmacology, Biochemistry and Behavior*, the researchers from the Department of Psychology and the Princeton Neuroscience Institute reported on two experiments investigating the link between the consumption of high-fructose corn syrup and obesity.

The first study showed that male rats given water sweetened with high-fructose corn syrup in addition to a

standard diet of rat chow gained much more weight than male rats that received water sweetened with table sugar, or sucrose, in conjunction with the standard diet. The concentration of sugar in the sucrose solution was the same as is found in some commercial soft drinks, while the high-fructose corn syrup solution was half as concentrated as most sodas.

The second experiment -- the first long-term study of the effects of high-fructose corn syrup consumption on obesity in lab animals -- monitored weight gain, body fat and triglyceride levels in rats with access to high-fructose corn syrup over a period of six months. Compared to animals eating only rat chow, rats on a diet rich in high-fructose corn syrup showed characteristic signs of a dangerous condition known in humans as the metabolic syndrome, including abnormal weight gain, significant increases in circulating triglycerides and augmented fat deposition, especially visceral fat around the belly. Male rats in particular ballooned in size: Animals with access to high-fructose corn syrup gained 48 percent more weight than those eating a normal diet.

"These rats aren't just getting fat; they're demonstrating characteristics of obesity, including substantial increases in abdominal fat and circulating triglycerides," said Princeton graduate student Miriam Bocarsly. "In humans, these same characteristics are known risk factors for high blood pressure, coronary artery disease, cancer and diabetes." In addition to Hoebel and Bocarsly, the research team included Princeton undergraduate Elyse Powell and visiting research associate Nicole Avena, who was affiliated with Rockefeller University during the study and is now on the faculty at the University of Florida. The Princeton researchers note that they do not know yet why high-fructose corn syrup fed to rats in their study generated more triglycerides, and more body fat that resulted in obesity.

When male rats were given water sweetened with high-fructose corn syrup in addition to a standard diet of rat chow, the animals gained much more weight than male rats that received water sweetened with table sugar, or sucrose, along with the standard diet. The concentration of sugar in the sucrose solution was the same as is found in some commercial soft drinks, while the high-fructose corn syrup solution was half as concentrated as most sodas, including the orange soft drink shown here.

High-fructose corn syrup and sucrose are both compounds that contain the simple sugars fructose and glucose, but there are at least two clear differences between them. First, sucrose is composed of equal amounts of the two simple sugars -- it is 50 percent fructose and 50 percent glucose -- but the typical high-fructose corn syrup used in this study features a slightly imbalanced ratio, containing 55 percent fructose and 42 percent glucose. Larger sugar molecules called higher saccharides make up the remaining 3 percent of the sweetener. Second, as a result of the manufacturing process for high-fructose corn syrup, the fructose molecules in the sweetener are free and unbound, ready for absorption and utilization. In contrast, every fructose molecule in sucrose that comes from cane sugar or beet sugar is bound to a corresponding glucose molecule and must go through an extra metabolic step before it can be utilized.

This creates a fascinating puzzle. The rats in the Princeton study became obese by drinking high-fructose corn syrup, but not by drinking sucrose. The critical differences in appetite, metabolism and gene expression that underlie this phenomenon are yet to be discovered, but may relate to the fact that excess fructose is being metabolized to produce fat, while glucose is largely being processed for energy or stored as a carbohydrate, called glycogen, in the liver and muscles.

In the 40 years since the introduction of high-fructose corn syrup as a cost-effective sweetener in the American diet, rates of obesity in the U.S. have skyrocketed, according to the Centers for Disease Control and Prevention. In 1970, around 15 percent of the U.S. population met the definition for obesity; today, roughly one-third of the American adults are considered obese, the CDC reported. High-fructose corn syrup is found in a wide range of foods and beverages, including fruit juice, soda, cereal, bread, yogurt, ketchup and mayonnaise. On average, Americans consume 60 pounds of the sweetener per person every year.

"Our findings lend support to the theory that the excessive consumption of high-fructose corn syrup found in many beverages may be an important factor in the obesity epidemic," Avena said.

The new research complements previous work led by Hoebel and Avena demonstrating that sucrose can be addictive, having effects on the brain similar to some drugs of abuse.

In the future, the team intends to explore how the animals respond to the consumption of high-fructose corn syrup in conjunction with a high-fat diet -- the equivalent of a typical fast-food meal containing a hamburger, fries and soda -- and whether excessive high-fructose corn syrup consumption contributes to the diseases associated with obesity. Another step will be to study how fructose affects brain function in the control of appetite.

The research was supported by the U.S. Public Health Service.

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

## **Ingredient in tequila (Agave) plant may fight osteoporosis and other diseases**

SAN FRANCISCO, March 23, 2010 — The plant that gave the world tequila contains a substance that seems ideal for use in a new genre of processed foods -- so-called "functional foods" -- with health benefits over and above serving as a source of nutrients, scientists reported here today at the 239th National Meeting of the American Chemical Society (ACS). Foods spiked with "fructans" from the agave plant may help protect against osteoporosis by boosting the body's absorption of calcium and could have other health benefits, they said.

"Fructans are considered functional food ingredients because they affect body processes in ways that result in better health and reduction in the risk of many diseases," said Mercedes López, Ph.D., who delivered the report. She is with the National Polytechnic Institute, Guanajuato, Mexico. "Experimental studies suggest that fructans may be beneficial in diabetes, obesity, stimulating the immune system of the body, decreasing levels of disease-causing bacteria in the intestine, relieving constipation, and reducing the risk of colon cancer."

Fructans are non-digestible carbohydrates. They consist of molecules of fructose -- the sugar found in honey, grapes, and ripe fruits -- linked together into chains. Rich natural sources include artichokes, Jerusalem artichokes, garlic and onions, and chicory. Fructans do not occur in tequila, however, because they change into alcohol when agave is used to make tequila, López said.

So-called "inulin-type" fructans from chicory find wide use in the United States and other countries in ice cream, breakfast cereals, baked goods, sauces, beverages, and other foods. Small fructans have a sweet taste, while those formed from longer chains of fructose have a neutral taste and give foods a smooth, pleasant texture. **Scientific studies have suggested that fructans stimulate the growth of healthful bacteria in the large intestine in a way that increases the body's absorption of minerals, including the calcium and magnesium important for bone growth.**

In the new study, López and colleagues set out to determine what effects agave fructans actually have on bone growth. They tested the effects of agave fructans on laboratory mice, used as stand-ins for humans in such research. **Mice fed agave fructans absorbed more calcium from food, excreted less calcium in their feces, and showed a 50 percent increase in levels of a protein associated with the build-up of new bone tissue.**

"These results suggest that the supplementation of the standard diet with agave fructans prevented bone loss and improved bone formation, indicating the important role of agave fructans on the maintenance of healthy bone," López said. "They can be used in many products for children and infants to help prevent various diseases, and can even be used in ice cream as a sugar substitute."

López said her findings suggest that agave fructans could be used in all of the same foods as chicory fructans. One advantage: Agave grows abundantly in Mexico and other countries with climates that do not favor growth of chicory. In addition, the scientists cited hints from past research that agave fructans may have greater health benefits. Agave fructans, for instance, seem to stimulate production of greater amounts of incretins than the inulin-type fructans from chicory. Incretins are a group of gastrointestinal hormones that increase in the amount of insulin released by the pancreas. That could be beneficial for individuals with diabetes or high blood sugar levels who are at risk of diabetes, López said. One incretin stimulated by agave fructans is a good satiety enhancer, which would make people feel full on less food.

"We still have a long way to go to determine for which health benefits agave fructans perform better than chicory fructans," López said. "However, the early results are encouraging, and we working on it."

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## **High systolic BP in patients with chest pain linked with favorable prognosis**

**New research finds that there is an inverse association between the level of supine (lying face up) systolic blood pressure measured on admission to an intensive care unit for acute chest pain and risk of death at one year, with those patients having high systolic blood pressure having a better prognosis after a year, according to a study in the March 24/31 issue of JAMA.**

High blood pressure (BP) when measured after a resting period is among the best studied and established risk factors for cardiovascular disease, according to background information in the article. "However, little is known about the relationship between BP under acute stress, such as in acute chest pain, and subsequent mortality," the authors write.

Fredrik H. Nystrom, M.D., Ph.D., and colleagues from Linköping University, Linköping, Sweden, examined the death rate in relation to supine systolic BP measured at admission to an intensive care unit (ICU) for chest pain from 1997 through 2007. **The study included analysis of data from 119,151 patients in a registry that includes all Swedish hospitals. Results from this study were presented according to systolic BP quartiles: Q1, less than 128 mm Hg; Q2, from 128 to 144 mm Hg; Q3, from 145 to 162 mm Hg; and Q4, at or above 163 mm Hg. Average follow-up time was 2.5 years.**

**The researchers found that the one-year mortality rate, after adjustment for various factors, showed that participants in Q1 of systolic BP had highest risk for death; conversely, patients in Q4 had the best prognosis.** "Corresponding adjusted absolute risks were a 21.7 percent lower absolute risk for death within 1 year for patients in Q4 compared with Q2. The mortality risk was 15.2 percent lower for patients in Q3 compared with Q2 while the risk for patients in Q1 was 40.3 percent higher for mortality compared with that in Q2," the authors write.

"High supine systolic BP measured in patients with acute chest pain was associated with a favorable 1-year prognosis," they write. "There is an inverse association between admission supine systolic BP and 1-year mortality rate in patients admitted to the medical ICU for chest pain. This finding also applies to those patients who are diagnosed with ischemic heart disease and those who eventually develop [heart attack]."

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## **Trans fats linked to increased endometriosis risk and omega-3-rich food linked to lower risk**

Women whose diets are rich in foods containing Omega-3 oils might be less likely to develop endometriosis, while those whose diets are heavily laden with trans fats might be more likely to develop the debilitating condition, new research published today (Wednesday 24 March) suggests.

The study - which is the largest to have investigated the link between diet and endometriosis risk and the first prospective study to identify a modifiable risk factor for the condition - found that while the total amount of fat in the diet did not matter, the type of fat did. Women who ate the highest amount of long-chain Omega-3 fatty acids were 22% less likely to be diagnosed with endometriosis than those who ate the least and that those who ate the most trans fats had a 48% increased risk, compared with those who ate the least.

The findings from 70,709 American nurses followed for 12 years, published online in Europe's leading reproductive medicine journal *Human Reproduction* [1], not only suggest that diet may be important in the development of endometriosis, but they also provide more evidence that a low fat diet is not necessarily the healthiest and further bolster the case for eliminating trans fats from the food supply, said the study's leader, Dr. Stacey Missmer, an assistant professor of obstetrics, gynaecology and reproductive biology at Brigham and Women's Hospital and Harvard Medical School in Boston, Massachusetts, USA.

"Millions of women worldwide suffer from endometriosis. Many women have been searching for something they can actually do for themselves, or their daughters, to reduce the risk of developing the disease, and these findings suggest that dietary changes may be something they can do. The results need to be confirmed by further research, but this study gives us a strong indication that we're on the right track in identifying food rich in Omega-3 oils as protective for endometriosis and trans fats as detrimental," Dr. Missmer added.

Endometriosis occurs when pieces of the womb lining, or endometrium, is found outside the womb. This tissue behaves in the same way as it does in the womb – growing during the menstrual cycle in response to oestrogen in anticipation of an egg being fertilized and shedding as blood when there's no pregnancy. However, when it grows outside the womb, it is trapped and cannot leave the body as menstruation. Some women experience no symptoms, but for many it is very incapacitating, causing severe pain. The tissue can also stick to other organs, sometimes leading to infertility. It afflicts about 10% of women. The cause is poorly understood and there is no cure. Symptoms are traditionally treated with pain medication, hormone drugs or surgery.

In the study, the researchers collected information from 1989 to 2001 on 70,709 women enrolled in the U.S. Nurses Health Study cohort. They used three food-frequency questionnaires spaced at four-year intervals to record the women's usual dietary habits over the preceding year. They categorized consumption of the various types of dietary fat into five levels and related that information to later confirmed diagnoses of endometriosis. A total of 1,199 women were diagnosed with the disease by the end of the study. The results were adjusted to eliminate any influence on the findings from factors such as total calorie intake, body mass index, number of children borne and race.

Long-chain Omega-3 fatty acids are found mostly in oily fish. They have been linked to reduced heart disease risk. In the study, the highest contributor was mayonnaise and full-fat salad dressing, followed by fatty fish such as tuna, salmon and mackerel.

Trans fats are artificially produced through hydrogenation, which turns liquid vegetable oil into solid fat. Used in thousands of processed foods, from snacks to ready-meals, they have already been linked to increased heart disease risk. Some countries and municipalities have banned them. The major sources of trans fats in this study were fried restaurant foods, margarine and crackers.

"Women tend to go to the Internet in particular to look for something they can do. The majority of the dietary recommendations they find there are the ones prescribed for heart health, but until now, those had not been evaluated specifically for endometriosis," Dr. Missmer said. "This gives them information that is

more tailored and provides evidence for another disease where it is the type of fat in the diet, rather than the total amount, that is important."

Besides confirming the finding, a next step could be to investigate whether dietary intervention that reduces trans fats and increases Omega-3 oils can alleviate symptoms in women who already have endometriosis, Dr. Missmer added.

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## **Dietary supplement speeds silver cyclists**

Taking arginine supplements can improve the cycling ability of over-50s. Researchers writing in BioMed Central's Journal of the International Society of Sports Nutrition tested a combination of the amino acid and an antioxidant in sixteen cyclists, finding that it enhanced their anaerobic threshold – the amount of work done before lactic acid begins to accumulate in the blood.

Zhaoping Li worked with a team of researchers from the University of California, Los Angeles, USA, to carry out the randomized controlled trial. She said, "The loss of exercise capacity with age often results in a reduction in physical fitness and more rapid senescence. A dietary supplement that increases exercise capacity might help to preserve physical fitness by optimizing performance and improving general health and well being in older people".

One way in which older people may reduce their exercise capacity revolves around the signaling molecule nitric oxide (NO), which is involved in many physiological processes, including those related to working out. NO production diminishes in quantity and availability as we age and is associated with an increased prevalence of other cardiovascular risk factors. In the body, NO is created from the amino acid arginine and is inactivated by oxygen free radicals. By supplementing diet with both the precursor and an anti-oxidant, the researchers hoped to support the NO system in the cyclists and thereby enhance performance.

**Sixteen cyclists aged between 50 and 73 were randomly assigned to receive either the supplement or dummy placebo pills. After one week of study, the anaerobic threshold of the supplement group increased, while that of the control group did not significantly alter. This increase in anaerobic threshold was preserved at week three. According to Li, "We've demonstrated a 16.7% increase in anaerobic threshold. This indicates a potential role of arginine and antioxidant supplementation in improving exercise performance in elderly".**

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## **Indian spice may delay liver damage and cirrhosis**

Curcumin improves sclerosing cholangitis in Mdr2 -/- mice by inhibition of cholangiocyte inflammatory response and portal myofibroblast proliferation

Curcumin, one of the principal components of the Indian spice turmeric, seems to delay the liver damage that eventually causes cirrhosis, suggests preliminary experimental research in the journal Gut.

Curcumin, which gives turmeric its bright yellow pigment, has long been used in Indian Ayurvedic medicine to treat a wide range of gastrointestinal disorders.

Previous research has indicated that it has anti-inflammatory and antioxidant properties which may be helpful in combating disease.

The research team wanted to find out if curcumin could delay the damage caused by progressive inflammatory conditions of the liver, including primary sclerosing cholangitis and primary biliary cirrhosis.

Both of these conditions, which can be sparked by genetic faults or autoimmune disease, cause the liver's plumbing system of bile ducts to become inflamed, scarred, and blocked. This leads to extensive tissue damage and irreversible and ultimately fatal liver cirrhosis.

The research team analysed tissue and blood samples from mice with chronic liver inflammation before and after adding curcumin to their diet for a period of four and a period of eight weeks.

The results were compared with the equivalent samples from mice with the same condition, but not fed curcumin.

The findings showed that the curcumin diet significantly reduced bile duct blockage and curbed liver cell (hepatocyte) damage and scarring (fibrosis) by interfering with several chemical signalling pathways involved in the inflammatory process.

These effects were clear at both four and eight weeks. No such effects were seen in mice fed a normal diet.

The authors point out that current treatment for inflammatory liver disease involves ursodeoxycholic acid, the long term effects of which remain unclear. The other alternative is a liver transplant.

Curcumin is a natural product, they say, which seems to target several different parts of the inflammatory process, and as such, may therefore offer a very promising treatment in the future.

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## **Pig Virus DNA Found in Rotavirus Vaccine**

### **FDA: No Problems Seen in 1 Million U.S. Kids Who Got Rotarix Vaccine**

WASHINGTON — U.S. health officials urged pediatricians Monday to temporarily stop using one of two vaccines against a leading cause of diarrhea in babies, after discovering that doses of GlaxoSmithKline's Rotarix were contaminated with bits of an apparently benign pig virus.

Glaxo's vaccine has been used in millions of children worldwide, including 1 million in the U.S., with no signs of safety problems – and the pig virus isn't known to cause any kind of illness in people or animals, said Dr. Margaret Hamburg, commissioner of the Food and Drug Administration.

But vaccines are supposed to be sterile, and because there is a competing vaccine against diarrhea-causing rotavirus that has tested clean – Merck's RotaTeq – the FDA decided to err on the side of caution.

"We don't want to scare parents," Hamburg told reporters. "This was a difficult decision for us to make because there is no evidence at this time that there is a risk to patients who have received this vaccine, and we know there are real benefits for children to be vaccinated against rotavirus."

Rotavirus causes severe diarrhea and is a leading child killer in developing countries. In the U.S., with better health care, about 55,000 children a year were hospitalized for rotavirus infections and several dozen died each year before vaccination began – with Merck's vaccine in 2006 and Glaxo's in 2008.

Glaxo said Monday that regulators abroad have decided not to change how Rotarix is used while scientists probe the relevance of the discovery.

A group of scientists testing a new way to detect viruses in a variety of products stumbled onto fragments of genetic material – broken pieces of DNA – from what's called porcine circovirus-1 in Rotarix and alerted Glaxo, which confirmed the findings and in turn alerted FDA, Hamburg said.

Story continues below

Rotarix, an oral vaccine, is made from a weakened strain of human rotavirus that has to be grown inside living cells before being purified into a vaccine dose. Glaxo uses a line of monkey kidney cells, or vero cells. Hamburg said the pig virus DNA fragments have been found in Glaxo's cell bank, meaning they were present from the vaccine's earliest development. How the original contamination occurred is under investigation.

Merck's competing rotavirus vaccine RotaTeq is made by a very different process, and FDA's testing showed no sign of the pig virus in it.

It's not the first time unwanted viruses have been discovered in vaccines. Best known is a monkey virus that contaminated some polio vaccine in the 1950s; years later, scientists investigated if the SV40 virus might have increased vaccine recipients' risk of later-in-life cancer but concluded it didn't.

"We live in a world that's teeming with microbes," Hamburg said, but until now this particular pig virus is not one that FDA thought vaccine makers needed to check their products against.

Parents should switch to the Merck vaccine for now – it requires three doses instead of Glaxo's two – because rotavirus is too serious a disease to ignore, said Dr. William Schaffner, a vaccine specialist at Vanderbilt University who was briefed on FDA's decision.

He's bracing for calls from worried parents and will tell them that "this has been an extraordinarily safe vaccine," and that the discovery is "a consequence of our improved science and ability to detect things that we never could before."

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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.**