



The Vitamin & Herb Stores

Human Technology Research Synopsis

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- 2. Popular diabetes drugs linked to increased risk of heart failure and death**
- 3. Coffee consumption associated with reduced risk of advanced prostate cancer**
- 4. Spices halt growth of breast stem cells, U-M study finds**
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Public release date: 30-Nov-2009

Chicken capsules good for aching joints

Chicken collagen can provide relief from rheumatoid arthritis (RA) symptoms. A randomised, controlled trial, published in BioMed Central's open access journal *Arthritis Research & Therapy*, has found that Chicken type II collagen (CCII), a protein extracted from the cartilage of chicken breast, is a safe and effective treatment for RA.

Wei Wei, from Anhui Medical University, China, worked with a team of researchers to test the novel treatment by comparing it to the established antirheumatic drug methotrexate, in 503 RA patients.

Patients who received a 12-week course of CCII capsules showed significantly improved joint function, with fewer and milder adverse effects than those taking methotrexate. According to Wei, "We've shown that CCII is a promising alternative therapeutic strategy that may be used as a nutritional supplement against rheumatoid arthritis".

RA is an autoimmune disease caused by the body mounting a response against its own cartilage – the rubbery tissue, composed mainly of collagen, which cushions and lubricates joints. By dosing patients with collagen in the form of CCII capsules, the researchers believe that 'oral tolerance' can be developed. Wei said "Oral tolerance is a reduction in autoimmune activity caused by repeated dietary exposure to the offending substance. Treatment of autoimmune diseases by induction of oral tolerance is attractive because of the few side effects and easy clinical implementation of this approach. Indeed, our work confirms that treatment with oral CCII leads to improvement in arthritis with no significant side effects".

Public release date: 30-Nov-2009

Long-term physical activity has an anti-aging effect at the cellular level

Study highlights:

Physical activity has an anti-aging effect at the cellular level, suggesting exercise could prevent aging of the cardiovascular system.

- Two groups of trained professional athletes were compared with those who were not trained athletes. The blood cells of the individuals with long-term exercise training exhibited molecular indicators of reduced aging.

DALLAS, Nov. 30, 2009 — Intensive exercise prevented shortening of telomeres, a protective effect against aging of the cardiovascular system, according to research reported in *Circulation: Journal of the American Heart Association*.

Researchers measured the length of telomeres — the DNA that bookends the chromosomes and protects the ends from damage — in blood samples from two groups of professional athletes and two groups who were healthy nonsmokers, but not regular exercisers.

The telomere shortening mechanism limits cells to a fixed number of divisions and can be regarded as a "biological clock." Gradual shortening of telomeres through cell divisions leads to aging on the cellular level and may limit lifetimes. When the telomeres become critically short the cell undergoes death. The 2009 Nobel Prize in Physiology or Medicine was awarded to researchers who discovered the nature of telomeres and how chromosomes are protected by telomeres and the enzyme telomerase.

“The most significant finding of this study is that physical exercise of the professional athletes leads to activation of the important enzyme telomerase and stabilizes the telomere,” said Ulrich Laufs, M.D., the study’s lead author and professor of clinical and experimental medicine in the department of internal medicine at Saarland University in Homburg, Germany.

“This is direct evidence of an anti-aging effect of physical exercise. Physical exercise could prevent the aging of the cardiovascular system, reflecting this molecular principle.”

Essentially, the longer telomere of athletes is an efficient telomere. The body’s cells are constantly growing and dividing and eventually dying off, a process controlled by the chromosomes within each cell. These chromosomal “end caps” — which have been likened to the tips of shoelaces, preventing them from fraying — become shorter with each cell division, and when they’re gone, the cell dies. Short telomeres limit the number of cell divisions, Laufs said. In addition, the animal studies of Laufs and colleagues show that the regulation of telomere stabilizing proteins by exercise exerts important cellular functions beyond the regulation of telomere length itself by protecting from cellular deterioration and programmed cell death.

In the clinical study, researchers analyzed 32 professional runners, average age 20, from the German National Team of Track and Field. Their average running distance was about 73 kilometers (km), a little over 45 miles, per week.

Researchers compared the young professional athletes with middle-aged athletes with a history of continuous endurance exercise since their youth. Their average age was 51 and their average distance was about 80 km, or almost 50 miles, per week.

The two groups were evaluated against untrained athletes who were healthy nonsmokers, but who did not exercise regularly. They were matched for age with the professional athletes.

The fitness level of the athletes was superior to the untrained individuals. The athletes had a slower resting heart rate, lower blood pressure and body mass index, and a more favorable cholesterol profile, researchers said.

Long-term exercise training activates telomerase and reduces telomere shortening in human leukocytes. The age-dependent telomere loss was lower in the master athletes who had performed endurance exercising for several decades.

“Our data improves the molecular understanding of the protective effects of exercise on the vessel wall and underlines the potency of physical training in reducing the impact of age-related disease,” Laufs said.

The German Research Association and the University of Saarland funded the study.

Co-authors are: Christian Werner, M.D.; Tobias Furster, medical student; Thomas Widmann, M.D.; Janine Pöss, M.D.; Christiana Roggia, Ph. D.; Milad Hanhoun, M.D.; Jürgen Scharhag, M.D.; Nicole Buchner, Ph. D.; Tim Meyer, M.D.; Willfried Kindermann, M.D.; Judith Haendeler, Ph. D. and Michael Böhm, M.D.

Public release date: 1-Dec-2009

To keep muscles strong, the 'garbage' has to go

In order to maintain muscle strength with age, cells must rid themselves of the garbage that accumulates in them over time, just as it does in any household, according to a new study in the December issue of *Cell Metabolism*, a Cell Press journal. In the case of cells, that waste material includes spent organelles, toxic clumps of proteins, and pathogens.

The researchers made their discovery by studying mice that were deficient for a gene required for the tightly controlled process of degradation and recycling within cells known as autophagy. Those animals showed profound muscle atrophy and muscle weakening that worsened with age.

"If there is a failure of the system to remove what is damaged, and that persists, the muscle fiber isn't happy," said Marco Sandri of the University of Padova in Italy. Damaged and misfolded proteins pile up along with dysfunctional mitochondria, distended endoplasmic reticulum, free radicals, and other aberrant structures. **Eventually, some of those muscle cells die, and "the muscles become weaker and weaker with age."**

The muscle wasting observed in the mice seems to bear some resemblance to certain forms of muscle-wasting diseases, Sandri said. He now suspects that this kind of mechanism may offer insight into some of those still-unexplained conditions, as well as the muscle weakening that comes with normal aging (a condition known as sarcopenia).

Researchers knew before that excessive autophagy could also lead to muscle loss and disease. The new findings highlight the importance of maintaining a normal level of autophagy to clear away the debris and keep muscles working properly. Although the discovery seems to make perfect sense in retrospect, it wasn't what Sandri's team had initially anticipated.

"We thought if you reduced autophagy it might protect against atrophy," he said. "Instead, it's the opposite. We realized, OK, of course, if you don't remove the damage, it triggers weakness."

The findings may have clinical implications, he says. There has been interest in developing therapies to block proteins' degradation for treating certain muscle-wasting disorders. But in some cases, at least, "it may be better to activate autophagy and remove the garbage in the cells," Sandri said. The researchers think similar treatments might combat aging sarcopenia as well, noting that another study has shown a decline in the efficiency of autophagy during aging.

Public release date: 1-Dec-2009

Will copper keep us safe from the superbugs?

London, 1 December 2009 – Three papers scheduled for publication in the January issue of the Journal of Hospital Infection

(http://www.elsevier.com/wps/find/journaldescription.cws_home/623052/description#description),

published by Elsevier, suggest that copper might have a role in the fight against healthcare-associated infections.

In a busy Birmingham teaching hospital, researchers swapped a conventional toilet seat, tap-handles and a ward door push-plate for similar items made from 70% copper. **They compared the number of microbes on the copper surfaces against the number of bacteria on the same items from another ward and found that the copper surfaces had 90-100% fewer live bacteria than the non-copper surfaces.**

Similar findings were reported from a primary healthcare facility in the Western Cape, South Africa. Researchers there found 71% fewer microbes on frequently touched surfaces overlaid with copper sheets (a desk, trolley, cupboard and window sill) compared with corresponding items made with conventional materials.

In addition to copper surfaces, cleaners have been using a copper-based disinfectant along with microfibre mops in Dumfries and Galloway, Scotland. Microfibre products are widely used in UK hospitals since they attract bacteria from surfaces and reach into places that other cleaning materials do not; however, they are difficult to disinfect. The copper-based disinfectant (CuWBO) cleaned the microfibre as well as the environment. Then, it appeared to continue killing germs for the rest of the day.

Prof Elliott, who led the research at University Hospital Birmingham, has further commented: "The results of the first clinical trials in both Birmingham and South Africa suggest that the use of copper may assist in maintaining hospital surfaces free of bacteria and could augment cleaning programmes already introduced into health care settings. The findings related to the use of a copper biocide adds further evidence to the potential of this metal for fighting infection."

Whilst copper may indeed have a future role in the prevention of hospital-acquired infection, experts from the Hospital Infection Society were quick to point out that these innovative products will not reduce the need for effective and regular cleaning regimens, nor compliance with proper hand sanitation.

Public release date: 1-Dec-2009

Are the effects of pornography negligible?

Universite de Montreal professor refutes demonization of pornography

Montreal, December 1, 2009 – A Université de Montréal researcher, funded by the Interdisciplinary Research Center on Family Violence and Violence Against Women, has launched a new study to examine the effects of pornography on men. **"We started our research seeking men in their twenties who had never consumed pornography. We couldn't find any,"** says Simon Louis Lajeunesse, a postdoctoral student and professor at the School of Social Work.

"The objective of my work is to observe the impact of pornography on the sexuality of men, and how it shapes their perception of men and women," says Lajeunesse. To do so, he has so far recruited and interviewed 20 heterosexual male university students who consume pornography.

"They shared their sexual history starting with their first contact with pornography, which was in early adolescence. Not one subject had a pathological sexuality. In fact, all of their sexual practices were quite conventional," says Lajeunesse.

The research concluded that 90 percent of pornography is consumed on the Internet, while 10 percent comes from video stores. On average, single men watch pornography three times a week for 40 minutes. Those who are in committed relationships watch it on average 1.7 times a week for 20 minutes.

Lajeunesse found most boys seek out pornographic material by the age of 10, when they are most sexually curious. However, they quickly discard what they don't like and find offensive. As adults, they will continue to look for content in tune with their image of sexuality. They also rarely consume pornography as a couple and always choose what they watch.

All test subjects said they supported gender equality and felt victimized by rhetoric demonizing pornography. "Pornography hasn't changed their perception of women or their relationship which they all want as harmonious and fulfilling as possible. Those who could not live out their fantasy in real life with their partner simply set aside the fantasy. The fantasy is broken in the real world and men don't want their partner to look like a porn star," says Lajeunesse.

Lajeunesse refutes the perverse effect often attributed to pornography. **"Aggressors don't need pornography to be violent and addicts can be addicted to drugs, alcohol, gaming and asocial cases are pathological. If pornography had the impact that many claim it has, you would just have to show**

heterosexual films to a homosexual to change his sexual orientation."

Public release date: 1-Dec-2009

Aspirin, Tylenol May Decrease Effectiveness of Vaccines (actually all antibodies, vaccinated or not) MUST READ

Mizzou scientists discover aspirin and Tylenol block enzymes that could inhibit vaccines

COLUMBIA, Mo. – With flu season in full swing and the threat of H1N1 looming, demand for vaccines is at an all-time high. Although those vaccines are expected to be effective, University of Missouri researchers have found further evidence that some over-the-counter drugs, such as aspirin and Tylenol, that inhibit certain enzymes could impact the effectiveness of vaccines.

"If you're taking aspirin regularly, which many people do for cardiovascular treatment, or acetaminophen (Tylenol) for pain and fever and get a flu shot, there is a good chance that you won't have a good antibody response," said Charles Brown, associate professor of veterinary path biology in the MU College of Veterinary Medicine. **"These drugs block the enzyme COX-1, which works in tissues throughout the body. We have found that if you block COX-1, you might be decreasing the amount of antibodies your body is producing, and you need high amounts of antibodies to be protected."**

COX enzymes play important roles in the regulation of the immune system. The role of these enzymes is not yet understood completely, and medications that inhibit them may have adverse side effects. Recent research has discovered that drugs that inhibit COX enzymes, such as COX-2, have an impact on the effectiveness of vaccines. Brown's research indicates that inhibiting COX-1, which is present in tissues throughout the body, such as the brain or kidneys, could also impact vaccines' effectiveness.

These MU researchers also are studying the regulation of inflammation and how that leads to the development or prevention of disease. Many diseases, such as arthritis, cardiovascular disease and diabetes, are all chronic inflammatory diseases. **Contrary to previous beliefs, inflammation is generally a good thing that helps protect individuals from infection. Many of the non-steroidal drugs that treat inflammatory conditions reduce antibody responses, which are necessary for treating infections.**

"So far, we've tested this on an animal model and have found that these non-steroidal drugs do inhibit vaccines, but the next step is to test it on humans," Brown said. "If our results show that COX-1 inhibitors affect vaccines, the takeaway might be to not take drugs, such as aspirin, Tylenol and ibuprofen, for a couple weeks before and after you get

a vaccine.”

Brown’s research, “Cyclooxygenase-1 Orchestrates Germinal Center Formation and Antibody Class-Switch via Regulation of IL-17,” has been published in The Journal of Immunology.

Public Release: 2-Dec-2009

Young adults who exercise get higher IQ

Young adults who are fit have a higher IQ and are more likely to go on to university, reveals a major new study carried out at the Sahlgrenska Academy and Sahlgrenska University Hospital.

The results were published today in the prestigious Proceedings of the National Academy of Sciences (PNAS). The study involved 1.2 million Swedish men doing military service who were born between 1950 and 1976. The research group analysed the results of both physical and IQ tests when the men enrolled.

The study shows a clear link between good physical fitness and better results for the IQ test. The strongest links are for logical thinking and verbal comprehension. But it is only fitness that plays a role in the results for the IQ test, and not strength.

“Being fit means that you also have good heart and lung capacity and that your brain gets plenty of oxygen,” says Michael Nilsson, professor at the Sahlgrenska Academy and chief physician at the Sahlgrenska University Hospital. “This may be one of the reasons why we can see a clear link with fitness, but not with muscular strength. We are also seeing that there are growth factors that are important.”

By analysing data for twins the researchers have been able to determine that it is primarily environmental factors and not genes that explain the link between fitness and a higher IQ.

“We have also shown that those youngsters who improve their physical fitness between the ages of 15 and 18 increase their cognitive performance,” says Maria Åberg, researcher at the Sahlgrenska Academy and physician at Åby health centre. “This being the case, physical education is a subject that has an important place in schools, and is an absolute must if we want to do well in maths and other theoretical subjects.”

The researchers have also compared the results from fitness tests during national service with the socio-economic status of the men later in life. Those who were fit at 18 were more likely to go into higher education, and many secured more qualified jobs.

The link between physical fitness and mental performance has previously been demonstrated in studies carried out on animals, children and old people. However, studies on young adults have been contradictory to date. Around the age of twenty our brain may still change rapidly as a result of both cognitive and emotional development.

The study was carried out at the Center for Brain Repair and Rehabilitation in Gothenburg in conjunction with the Swedish Twins Registry at the Karolinska Institutet.

Public Release: 2-Dec-2009

Toy recall of 2007 hurt innocent companies

Toronto, December 1, 2009 –The well-publicized toy recalls of 2007 took potentially harmful toys off the shelves and affected the companies that made them.

But a new study also shows that even companies not targeted by the recalls got hurt in the resulting consumer backlash, sometimes worse than the offenders. Meanwhile offending companies did not generally see other product categories affected.

In 2007, the U.S. Consumer Product Safety Commission recalled 276 toys and other children's products – more than an 80% increase over the previous year. **Almost all of the recalls involved toys made in China and many involved paint with elevated levels of lead.**

The study looked at the effects that the recalls had on sales of Infant and Preschool toys during the subsequent Christmas season. The authors found that Christmas sales for similar products by manufacturers named in the recalls were down by about 30% compared to other products that these manufacturers sold. But, these manufacturers' sales of toys that were sufficiently dissimilar to those named in the recalls did not seem to be affected. In other words, consumers did not "punish" offending manufacturer more generally.

“This may be because, in this industry, consumers do not recognize manufacturers as well as they recognize brands and trademarks. For example, consumers may identify brands such as Barbie and Hot Wheels without recognizing that both of these are, in fact, made by Mattel,” says Mara Lederman a professor at the University of Toronto's Rotman School of Management and one of three study co-authors

Perhaps most interestingly, the study finds that companies who did not have any recalls got hit too – their 2007 Christmas season sales were down about 25% compared to 2005. This suggests that these recalls influenced consumers' expectations of toy safety, in general.

“In this industry, one firm's offence seems to penalize other players,” says Lederman. “This may be happening because the recalls involved a common practice (manufacturing in China) or because brands and trademarks are commonly shared across different manufacturers and toys. One implication of this is that companies may have an interest in enforcing stricter industry-wide standards.”

The paper received financial support from the AIC Institute for Corporate Citizenship at the Rotman School of Management.

Ralph's Note - If you truly care about your kids, don't buy toys from China.

Public release date: 1-Dec-2009

Childhood lead exposure causes permanent brain damage

CHICAGO – A study using functional magnetic resonance imaging (fMRI) to evaluate brain function revealed that adults who were exposed to lead as children incur permanent brain injury. The results were presented today at the annual meeting of the Radiological Society of North America (RSNA).

"What we have found is that no region of the brain is spared from lead exposure," said the study's lead author, Kim Cecil, Ph.D., imaging scientist at Cincinnati Children's Hospital Medical Center and professor of radiology, pediatrics and neuroscience at the University of Cincinnati College of Medicine. "Distinct areas of the brain are affected differently."

The study is part of a large research project called the Cincinnati Lead Study, a long-term lead exposure study conducted through the Cincinnati Children's Environmental Health Center, a collaborative research group funded by the National Institute of Environmental Health Sciences and U.S. Environmental Protection Agency. The Cincinnati Lead Study followed prenatal and early childhood lead exposure of 376 infants from high-risk areas of Cincinnati between 1979 and 1987. Over the course of the project, the children underwent behavioral testing and 23 blood analyses that yielded a mean blood lead level.

Lead, a common and potent poison found in water, soil and lead-based paint, is especially toxic to children's rapidly developing nervous systems. Homes built before 1950 are most likely to contain lead-based paint, which can chip and be ingested by children.

"Lead exposure has been associated with diminished IQ, poor academic performance, inability to focus and increased risk of criminal behavior," Dr. Cecil said.

Dr. Cecil's study involved 33 adults who were enrolled as infants in the Cincinnati Lead Study. The mean age of the study participants, which included 14 women and 19 men, was 21 years. The participants' mean blood lead levels ranged from 5 to 37 micrograms per deciliter with a mean of 14. Participant histories showed IQ deficiencies, juvenile delinquency and a number of criminal arrests.

Each participant underwent fMRI while performing two tasks to measure the brain's executive functioning, which governs attention, decision making and impulse control. The imaging revealed that in order to complete a task that required inhibition, those with

increased blood lead levels required activation from additional regions within the frontal and parietal lobes of the brain.

"This tells us that the area of the brain responsible for inhibition is damaged by lead exposure and that other regions of the brain must compensate in order for an individual to perform," Dr. Cecil said. "However, the compensation is not sufficient."

Imaging performed during a second task designed to test attention revealed an association between higher lead levels and decreased activation in the parietal region and other areas of the brain.

According to Dr. Cecil, the brain's white matter, which organizes and matures at an early age, adapts to lead exposure, while the frontal lobe, which is the last part of the brain to develop, incurs multiple insults from lead exposure as it matures.

"Many people think that once lead blood levels decrease, the effects should be reversible, but, in fact, lead exposure has harmful and lasting effects," she said.

Dr. Cecil believes that these findings lend support to previous reports from the Cincinnati Lead Study showing that the lasting neurological effect of lead exposure, rather than a poor social environment, is a key contributor to the subsequent cognitive and behavior problems in this group.

Public release date: 3-Dec-2009

Green tea chemical combined with another may hold promise for treatment of brain disorders

Watertown, MA—Scientists at Boston Biomedical Research Institute (BBRI) and the University of Pennsylvania have found that combining two chemicals, one of which is the green tea component EGCG, can prevent and destroy a variety of protein structures known as amyloids. Amyloids are the primary culprits in fatal brain disorders such as Alzheimer's, Huntington's, and Parkinson's diseases. Their study, published in the current issue of Nature Chemical Biology (December 2009), may ultimately contribute to future therapies for these diseases.

"These findings are significant because it is the first time a combination of specific chemicals has successfully destroyed diverse forms of amyloids at the same time," says Dr. Martin Duennwald of BBRI, who co-led the study with Dr. James Shorter of University of Pennsylvania School of Medicine.

For decades a major goal of neurological research has been finding a way to prevent the formation of and to break up and destroy amyloid plaques in the brains and nervous systems of people with Alzheimer's and other degenerative diseases before they wreak havoc.

Amyloid plaques are tightly packed sheets of proteins that infiltrate the brain. These plaques, which are stable and seemingly impenetrable, fill nerve cells or wrap around brain tissues and eventually (as in the case of Alzheimer's) suffocate vital neurons or brain cells, causing loss of memory, language, motor function and eventually premature death.

To date, researchers have had no success in destroying plaques in the human brain and only minimal success in the laboratory. One reason for these difficulties in finding compounds that can dissolve amyloids is their immense stability and their complex composition.

Yet, Duennwald experienced success in previous studies when he exposed amyloids in living yeast cells to EGCG. Furthermore, he and his collaborators also found before that DAPH-12, too, inhibits amyloid production in yeast.

In their new study, the team decided to look in more detail at the impact of these two chemicals on the production of different amyloids produced by the yeast amyloid protein known as PSI+. They chose this yeast amyloid protein because it has been studied extensively in the past, and because it produces varieties of amyloid structures that are prototypes of those found in the damaged human brain. Thus, PSI+ amyloids are excellent experimental paradigms to study basic properties of all amyloid proteins.

The team's first step was to expose two different amyloid structures produced by yeast (e.g., a weak version and a strong version) to EGCG. They found that the EGCG effectively dissolved the amyloids in the weaker version. To their surprise, they found that the stronger amyloids were not dissolved and that some transformed to even stronger versions after exposure to EGCG.

The team then exposed the yeast amyloid structures to a combination of the EGCG and the DAPH-12 and found that all of the amyloid structures broke apart and dissolved.

The next steps for the research team will be to explore the mechanism and potency of such a combinatorial therapy for the treatment of diverse neurodegenerative diseases.

"Our findings are certainly preliminary and we need further work to fully comprehend the effects of EGCG in combination with other chemicals on amyloids. Yet, we see our study as a very exciting initial step towards combinatorial therapies for the treatment of amyloid-based diseases," says Duennwald.

Public release date: 3-Dec-2009

Popular diabetes drugs linked to increased risk of heart failure and death

Research: Risk of cardiovascular disease and all cause mortality among patients with type 2 diabetes prescribed oral antidiabetes drugs: Retrospective cohort study using UK

general practice research database

Sulphonylureas, a type of drug widely used to treat type 2 diabetes, carries a greater risk of heart failure and death compared with metformin, another popular antidiabetes drug.

The findings, published on bmj.com today, suggest clinically important differences in the cardiovascular safety profiles of different antidiabetes drugs, and support recommendations that favour metformin as first-line therapy for type 2 diabetes.

Type 2 diabetes affects more than 180 million people worldwide and is associated with at least a two-fold increased risk of death, mainly from cardiovascular disease. Oral antidiabetes drugs are widely used to help control blood sugar levels, but there are concerns that some may increase cardiovascular risk.

So a team of researchers led by Professor Paul Elliott from Imperial College London set out to investigate the risk of heart attack (myocardial infarction), congestive heart failure and death from any cause associated with prescription of different types of oral antidiabetes drugs.

They used data from 91,521 men and women (average age 65 years) with diabetes included in the UK General Practice Research Database between 1990 and 2005. Factors that could potentially affect the results were taken into account.

Metformin was the most commonly prescribed drug (74.5% of patients), followed by second generation sulphonylureas (63.5%).

Compared with metformin, both first and second generation sulphonylureas were associated with significant (up to 61%) excess risk of all cause mortality, and second generation sulphonylureas with up to 30% excess risk of congestive heart failure.

Another class of antidiabetes drugs called thiazolidinediones were not associated with risk of heart attack, and there was significantly (up to 39%) lower risk of all cause mortality associated with pioglitazone use compared with metformin.

"The sulphonylureas, along with metformin, have long been considered the mainstay of drug treatment for type 2 diabetes. Our findings suggest a relatively unfavourable risk profile of sulphonylureas compared with metformin," say the authors.

As such, they support the recommendations of the American Diabetes Association and International Diabetes Federation that favour metformin as the initial treatment for type 2 diabetes.

Public release date: 4-Dec-2009

Researchers find increased dairy intake reduces risk of uterine fibroids in black women

(Boston)- Boston University School of Medicine (BUSM) researchers at the Slone

Epidemiology Center found that black women with high intake of dairy products have a reduced incidence of uterine leiomyomata (fibroids). This report, based on the Black Women's Health Study, appears in the current issue of the American Journal of Epidemiology.

Uterine fibroids are benign tumors of the uterus and are two to three times more common among black women than white women. They are the primary indication for hysterectomy in the U.S. and account for \$2.2 billion annually in health care costs.

National surveys show that black women consume fewer servings of dairy than white women and have lower intake of calcium, magnesium and phosphorus. The causes of fibroids are poorly understood, but sex steroid hormones and growth factors are thought to play a role. The Slone researchers studied dairy products because of the possibility that they have antioxidant effects and may modify endogenous sex hormones.

The study was based on data from the Black Women's Health Study. The 59,000 study participants, enrolled in 1995, completed biennial questionnaires on which they reported whether they were diagnosed with fibroids. Their diet was assessed at two points in time using a modified version of the National Cancer Institute's Block short-form food frequency questionnaire (FFQ).

Based on 5,871 incident cases of fibroids diagnosed after 10 years of follow-up, the study found that high dairy intake was inversely associated with fibroid risk after controlling for other risk factors. **Fibroid incidence was reduced by 30% among women who had 4 or more dairy servings a day**, relative to women who had less than 1 serving a day. Intakes of calcium, phosphorus, **and calcium-to-phosphorus ratio (an indicator of calcium bioavailability)** were also inversely associated with fibroid risk. Because dairy intake is lower among blacks than whites, such differences in intake may contribute to the racial discrepancy in rates of fibroids.

"Although the exact mechanisms are unclear, a protective effect of dairy consumption on uterine fibroids risk is plausible, as calcium, a major component of dairy foods, may reduce cell proliferation," said lead author Lauren A. Wise, ScD, an associate professor of epidemiology at Boston University School of Public Health and a senior epidemiologist at the Slone Epidemiology Center at BUSM. "This is the first report showing an inverse association between dairy intake and fibroid risk. If confirmed, a modifiable risk factor for fibroids, a major source of gynecologic morbidity, will have been identified," added Wise.

Public release date: 5-Dec-2009

Mayo Clinic and collaborators find vitamin D levels associated with survival in lymphoma patients

ROCHESTER, Minn. — A new study has found that the amount of vitamin D (<http://www.mayoclinic.org/news2008-mchi/4904.html>) in patients being treated for

diffuse large B-cell lymphoma (<http://www.mayoclinic.org/non-hodgkins-lymphoma/>) was strongly associated with cancer progression and overall survival. The results will be presented at the annual meeting of the American Society of Hematology (<http://www.hematology.org/>) in New Orleans.

"These are some of the strongest findings yet between vitamin D and cancer outcome," says the study's lead investigator, Matthew Drake, M.D., Ph.D., (<http://www.mayoclinic.org/bio/13726218.html>) an endocrinologist at Mayo Clinic in Rochester. "While these findings are very provocative, they are preliminary and need to be validated in other studies. However, they raise the issue of whether vitamin D supplementation might aid in treatment for this malignancy, and thus should stimulate much more research."

The researchers' study of 374 newly diagnosed diffuse large B-cell lymphoma patients found that 50 percent had deficient vitamin D levels based on the commonly used clinical value of total serum 25(OH)D less than 25 ng/mL. **Patients with deficient vitamin D levels had a 1.5-fold greater risk of disease progression and a twofold greater risk of dying, compared to patients with optimal vitamin D levels after accounting for other patient factors associated with worse outcomes.**

The study was conducted by a team of researchers from Mayo Clinic and the University of Iowa. These researchers participate in the University of Iowa/Mayo Clinic Lymphoma Specialized Program of Research Excellence (SPORE), (http://mayoresearch.mayo.edu/mayo/research/hematologic_malignancies/spore_lymphoma.cfm) which is funded by the National Cancer Institute. The 374 patients were enrolled in an epidemiologic study designed to identify predictors of outcomes in lymphoma. Since this was not a clinical trial, patient management and treatments were not assigned, but rather followed standard of care for clinical practice.

The findings support the growing association between vitamin D and cancer risk and outcomes, and suggest that vitamin D supplements might help even those patients already diagnosed with some forms of cancer, says Dr. Drake. "The exact roles that vitamin D might play in the initiation or progression of cancer is unknown, but we do know that the vitamin plays a role in regulation of cell growth and death, among other processes important in limiting cancer," he says.

The findings also reinforce research in other fields that suggest vitamin D is important to general health, Dr. Drake says. "It is fairly easy to maintain vitamin D levels through inexpensive daily supplements or 15 minutes in the sun three times a week in the summer, so that levels can be stored inside body fat," he says. Many physicians recommend 800-1,200 International Units (IU) daily, he adds.

Vitamin D is a steroid hormone obtained from sunlight and converted by the skin into its active form. It also can come from food (naturally or fortified as in milk) or from supplements. It is known best for its role of increasing the flow of calcium into the blood. Because of that role, vitamin D deficiency has long been known to be a major risk factor

for bone loss and bone fractures, particularly in elderly people whose skin is less efficient at converting sunlight into vitamin D. But recent research has found that many people suffer from the deficiency, and investigators are actively looking at whether low vitamin D promotes poorer health in general.

Cancer researchers have discovered that vitamin D regulates a number of genes in various cancers, including prostate, colon and breast cancers. Recent studies have suggested that vitamin D deficiency may play a role in causing certain cancers as well as impacting the outcome once someone is diagnosed with cancer.

Researchers looked at vitamin D levels in lymphoma patients because of the observation, culled from U.S. mortality maps issued by the National Cancer Institute, that both incidence and mortality rates of this cancer increase the farther north a person lives in the United States, where sunlight is limited in the winter. Also, several recent reports have concluded that vitamin D deficiency is associated with poor outcomes in other cancers, including breast, colon and head and neck cancer. This is the first study to look at lymphoma outcome.

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Antioxidant compound reduced incidence of colorectal metachronous adenomas

HOUSTON – Supplementation with a selenium-based antioxidant compound decreased the risk of developing new polyps of the large bowel — called colorectal metachronous adenomas — in people who previously had colorectal polyps removed.

"Our study is the first intervention trial specifically designed to evaluate the efficacy of the selenium-based antioxidant compound on the risk of developing metachronous adenomas," said Luigina Bonelli, M.D., head of the unit of secondary prevention and screening at the National Institute for Cancer Research, in Genoa, Italy.

Bonelli presented these findings at the American Association for Cancer Research Frontiers in Cancer Prevention Research Conference, held in Houston, Dec. 6-9, 2009.

Adenomatous polyps (or adenoma) are benign lesions of the large bowel that, in time, could progress to cancer. Even though only a small proportion of adenomas will develop into cancer, almost 70 percent to 80 percent of colorectal cancer stems from an adenoma.

Adenomas are common in people aged 60 years or older; one in four people will have at least one adenoma.

Participants in this study were aged 25 to 75 years and had already had one or more colorectal adenomas removed, but did not have any other diagnosis of colorectal diseases, cancer or life-threatening illnesses and did not use vitamins or calcium supplementations. The researchers randomized 411 participants to the placebo group or to receive an

antioxidant compound — specifically selenomethionine 200 µg, zinc 30 mg, vitamin A 6,000 IU, vitamin C 180 mg and vitamin E 30 mg.

"Our results indicated that individuals who consumed antioxidants had a 40 percent reduction in the incidence of metachronous adenomas of the large bowel," Bonelli said. "It is noteworthy that the benefit observed after the conclusion of the trial persisted through 13 years of follow up."

The researchers are currently conducting a study to evaluate the role of genetic alterations as predictors of metachronous adenomas in participants received the antioxidant compound compared with those in a placebo group.

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Exercise reduces death rate in prostate cancer patients

HOUSTON – As little as 15 minutes of exercise a day can reduce overall mortality rates in patients with prostate cancer, according to findings presented at the American Association for Cancer Research Frontiers in Cancer Prevention Research Conference, held here, Dec. 6-9, 2009.

"We saw benefits at very attainable levels of activity," said Stacey A. Kenfield, Sc.D., epidemiology research associate at the Harvard School of Public Health and lead author of the study. "The results suggest that men with prostate cancer should do some physical activity for their overall health."

Researchers assessed physical activity levels for 2,686 patients enrolled in the Health Professionals Follow-up Study, both before and after diagnosis (men with metastases at diagnosis were excluded).

Men who engaged in three or more hours of Metabolic Equivalent Tasks (MET) a week — equivalent to jogging, biking, swimming or playing tennis for about a half-hour per week — had a 35 percent lower risk of overall mortality.

Specific to walking, the researchers found that men who walked four or more hours a week had a 23 percent lower risk of all-cause mortality compared to men who walked less than 20 minutes per week. **Men who walked 90 or more minutes at a normal to brisk pace had a 51 percent lower risk of death from any cause** than men who walked less than 90 minutes at an easy walking pace.

Walking didn't show any effect on prostate cancer specific mortality, but more strenuous exercising did. Men who engaged in five or more hours of vigorous physical activity a week were at a decreased risk of dying from their prostate cancer.

"This is the first large population study to examine exercise in relation to mortality in prostate cancer survivors," said Kenfield. Previous studies focused on how exercise

affects risk of developing prostate cancer. Kenfield said that researchers aren't sure of the exact molecular effects exercise has on prostate cancer, but exercise is known to influence a number of hormones hypothesized to stimulate prostate cancer, boost immune function and reduce inflammation.

"How these factors may work together to affect prostate cancer biologically is still being studied," she said. "For now, our data indicate that for prostate cancer survivors, a moderate amount of regular exercise may improve overall survival, while five or more hours per week of vigorous exercise may decrease the death rate due to prostate cancer specifically."

Public release date: 7-Dec-2009

Coffee consumption associated with reduced risk of advanced prostate cancer

HOUSTON – While it is too early for physicians to start advising their male patients to take up the habit of regular coffee drinking, data presented at the American Association for Cancer Research Frontiers in Cancer Prevention Research Conference revealed a strong inverse association between coffee consumption and the risk of lethal and advanced prostate cancers.

"Coffee has effects on insulin and glucose metabolism as well as sex hormone levels, all of which play a role in prostate cancer. It was plausible that there may be an association between coffee and prostate cancer," said Kathryn M. Wilson, Ph.D., a postdoctoral fellow at the Channing Laboratory, Harvard Medical School and the Harvard School of Public Health.

In a prospective investigation, Wilson and colleagues found that men who drank the most coffee had a 60 percent lower risk of aggressive prostate cancer than men who did not drink any coffee. This is the first study of its kind to look at both overall risk of prostate cancer and risk of localized, advanced and lethal disease.

"Few studies have looked prospectively at this association, and none have looked at coffee and specific prostate cancer outcomes," said Wilson. "We specifically looked at different types of prostate cancer, such as advanced vs. localized cancers or high-grade vs. low-grade cancers."

Caffeine is actually not the key factor in this association, according to Wilson. The researchers are unsure which components of the beverage are most important, as coffee contains many biologically active compounds like antioxidants and minerals.

Using the Health Professionals' Follow-Up Study, the researchers documented the regular and decaffeinated coffee intake of nearly 50,000 men every four years from 1986 to 2006; 4,975 of these men developed prostate cancer over that time. They also

examined the cross-sectional association between coffee consumption and levels of circulating hormones in blood samples collected from a subset of men in the cohort.

"Very few lifestyle factors have been consistently associated with prostate cancer risk, especially with risk of aggressive disease, so it would be very exciting if this association is confirmed in other studies," said Wilson. "Our results do suggest there is no reason to stop drinking coffee out of any concern about prostate cancer."

This association might also help understand the biology of prostate cancer and possible chemoprevention measures.

Public release date: 7-Dec-2009

Young adults' blood lead levels linked to depression, panic disorder

Young adults with higher blood lead levels appear more likely to have major depression and panic disorders, even if they have exposure to lead levels generally considered safe, according to a report in the December issue of Archives of General Psychiatry, one of the JAMA/Archives journals.

"Lead is a well-known neurotoxicant that is ubiquitous in the environment, found in air, soil, dust and water," the authors write as background information in the article. Eliminating lead from gasoline has led to a dramatic decline in average blood levels, but remaining sources of exposure include paint, industrial processes, pottery and contaminated water. "Research on the neurotoxic effects of low-level lead exposure has focused on the in utero and early childhood periods. In adult populations, the neurotoxic effects of lead have been studied mainly in the context of occupational exposures, with levels of exposure orders of magnitude greater than that experienced by the general population."

Maryse F. Bouchard, Ph.D., M.Sc., of the Universite de Montreal, Canada, and Harvard School of Public Health, Boston, and colleagues analyzed data from 1,987 adults age 20 to 39 years who participated in the National Health and Nutrition Examination Survey between 1999 and 2004. Participants underwent medical examinations that included collection of a blood sample, and also completed a diagnostic interview to identify major depressive disorder, panic disorder and generalized anxiety disorder.

The number of young adults who met diagnostic criteria for major depressive disorder was 134 (6.7 percent), 44 (2.2 percent) had panic disorder and 47 (2.4 percent) had generalized anxiety disorder. **The average blood lead level was 1.61 micrograms per deciliter. The one-fifth of participants with the highest blood lead levels (2.11 micrograms per deciliter or more) had 2.3 times the odds of having major depressive disorder and nearly five times the odds of panic disorder as the one-fifth with the lowest lead levels (0.7 micrograms per deciliter or less).**

Smoking is related to blood lead levels, so the researchers conducted additional analyses

excluding the 628 smokers. Among non-smokers, the elevation in risk between the highest and lowest blood lead levels was increased to 2.5-fold for major depressive disorder and 8.2-fold for panic disorder.

Low-level lead exposure may disrupt brain processes, such as those involving the neurotransmitters catecholamine and serotonin, that are associated with depression and panic disorders, the authors note. Exposure to lead in individuals predisposed to these conditions could trigger their development, make them more severe or reduce response to treatment.

"These findings suggest that lead neurotoxicity may contribute to adverse mental health outcomes, even at levels generally considered to pose low or no risk," they conclude. "These findings, combined with recent reports of adverse behavioral outcomes in children with similarly low blood lead levels, should underscore the need for considering ways to further reduce environmental lead exposures."

Public release date: 7-Dec-2009

Spices halt growth of breast stem cells, U-M study finds

Curcumin, piperine could play role in preventing breast cancer

ANN ARBOR, Mich. — A new study finds that compounds derived from the spices turmeric and pepper could help prevent breast cancer by limiting the growth of stem cells, the small number of cells that fuel a tumor's growth.

Researchers at the University of Michigan Comprehensive Cancer Center have found that when the dietary compounds curcumin, which is derived from the Indian spice turmeric, and piperine, derived from black peppers, were applied to breast cells in culture, they decreased the number of stem cells while having no effect on normal differentiated cells.

"If we can limit the number of stem cells, we can limit the number of cells with potential to form tumors," says lead author Madhuri Kakarala, M.D., Ph.D., R.D., clinical lecturer in internal medicine at the U-M Medical School and a research investigator at the VA Ann Arbor Healthcare System.

Cancer stem cells are the small number of cells within a tumor that fuel the tumor's growth. Current chemotherapies do not work against these cells, which is why cancer recurs and spreads. Researchers believe that eliminating the cancer stem cells is key to controlling cancer. In addition, decreasing the number of normal stem cells – unspecialized cells that can give rise to any type of cell in that organ – can decrease the risk of cancer.

In this study, a solution of curcumin and piperine was applied to the cell cultures at the equivalent of about 20 times the potency of what could be consumed through diet. The compounds are available at this potency in a capsule form that could be taken by mouth.

(Note: This work has not been tested in patients, and patients are not encouraged to add curcumin or piperine supplements to their diet at this time.)

The researchers applied a series of tests to the cells, looking at markers for breast stem cells and the effects of curcumin and piperine, both alone and combined, on the stem cell levels. They found that piperine enhanced the effects of curcumin, and that the compounds interrupted the self-renewal process that is the hallmark of cancer-initiating stem cells. At the same time, the compounds had no affect on cell differentiation, which is the normal process of cell development.

“This shows that these compounds are not toxic to normal breast tissue,” Kakarala says. “Women at high risk of breast cancer right now can choose to take the drugs tamoxifen or raloxifene for prevention, but most women won’t take these drugs because there is too much toxicity. The concept that dietary compounds can help is attractive, and curcumin and piperine appear to have very low toxicity.”

Curcumin and piperine have been explored by other researchers as a potential cancer treatment. But this paper, published online in the journal *Breast Cancer Research and Treatment*, is the first to suggest these dietary compounds could prevent cancer by targeting stem cells.

In addition, tamoxifen or raloxifene are designed to affect estrogen, which is a factor in most, but not all breast cancers. In fact, the aggressive tumors that tend to occur more often in women with a family history or genetic susceptibility are typically not affected by estrogen. Because curcumin and piperine limit the self renewal of stem cells, they would impact cancers that are not estrogen sensitive as well as those that are.

Researchers are planning an initial Phase I clinical trial to determine what dose of curcumin or piperine can be tolerated in people. The trial is not expected to begin accruing participants until spring.

Breast cancer statistics: 194,280 Americans will be diagnosed with breast cancer this year and 40,610 will die from the disease, according to the American Cancer Society

Additional authors: Dean Brenner, Hasan Korkaya, Connie Cheng, Karim Tazi, Christophe Ginestier, Suling Liu, Gabriel Dontu and Max Wicha, all from U-M

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Most antidepressants miss key target of clinical depression

TORONTO, Dec. 8 /CNW/ - A key brain protein called monoamine oxidase A (MAO-A) - is highly elevated during clinical depression yet is unaffected by treatment with commonly used antidepressants, according to an important study published today in the Archives of General Psychiatry. The study has important implications for our understanding of why antidepressants don't always work.

Researchers at the Centre for Addiction and Mental Health (CAMH) used an advanced brain imaging method to measure levels of the brain protein MAO-A. MAO-A digests multiple brain chemicals, including serotonin, that help maintain healthy mood. High MAO-A levels excessively remove these brain chemicals.

Antidepressant medications are the most commonly prescribed treatments in North America, yet 50 per cent of people do not respond adequately to antidepressant treatment. Dr. Jeffrey Meyer the lead investigator explains, "Mismatches between treatment and disease are important for understanding why treatments don't always work. Rather than reversing the problem of MAO-A breaking down several chemicals, most antidepressants only raise serotonin."

Understanding the Problem of a Persistent Illness

Depression ranks as the fourth leading cause of disability and premature death worldwide, according to the World Health Organization. Recurrent illness is a major problem. Even under the most optimal treatment circumstances, recurrence rates for clinical depression are at least 20 per cent over two years.

The new study also focused upon people who had fully recovered from past episodes of clinical depression. Some people who appeared to be in recovery actually had high levels of MAO-A. Those with high levels of MAO-A then had subsequent recurrence of their depressive episodes.

This new idea of high levels of MAO-A lowering brain chemicals (called monoamines), then falling into a clinical depression is consistent with the historical finding that medications which artificially lower monoamines can lead to clinical depression as a side effect. In the 1950's some medications to treat high blood pressure also lowered monoamines and people began to experience depressive episodes. When the medications were removed, people recovered.

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.