



The Vitamin & Herb Stores

#85

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Public release date: 21-Jun-2010

Flame retardant linked to altered thyroid hormone levels during pregnancy

Berkeley — Pregnant women with higher blood levels of a common flame retardant had altered thyroid hormone levels, a result that could have implications for fetal health, according to a new study led by researchers at the University of California, Berkeley.

"This is the first study with a sufficient sample size to evaluate the association between PBDE flame retardants and thyroid function in pregnant women," said the study's lead author, Jonathan Chevrier, a UC Berkeley researcher in epidemiology and in environmental health sciences. "Normal maternal thyroid hormone levels are essential for normal fetal growth and brain development, so our findings could have significant public health implications. These results suggest that a closer examination between PBDEs and these outcomes is needed."

PBDEs, or polybrominated diphenyl ethers, are a class of organobromine compounds found in common household items such as carpets, textiles, foam furnishings, electronics and plastics. U.S. fire safety standards implemented in the 1970s led to increased use of PBDEs, which can leach out into the environment and accumulate in human fat cells.

Studies suggest that PBDEs can be found in the blood of up to 97 percent of U.S. residents, and at levels 20 times higher than those of people in Europe. **Because of California's flammability laws, residents in this state have some of the highest exposures to PBDEs in the world.**

"Despite the prevalence of these flame retardants, there are few studies that have examined their impact on human health," said the study's principal investigator, Brenda Eskenazi, UC Berkeley professor of epidemiology and of maternal and child health. "Our results suggest that exposure to PBDE flame retardants may have unanticipated human health risks."

The new study, to be published June 21 in the journal *Environmental Health Perspectives*, is the second study to come out this year from Eskenazi's research group linking PBDEs to human health effects. Eskenazi was the principal investigator on the earlier study that found that women with higher exposures to flame retardants took longer to get pregnant.

In the new study, the researchers analyzed blood samples from 270 women taken around the end of their second trimester of pregnancy. The women in the study were part of a larger longitudinal study from the Center for the Health Assessment of Mothers and Children of Salinas (CHAMACOS) that examines environmental exposures and reproductive health.

The researchers measured concentrations of 10 PBDE chemicals, two types of thyroxine (T4) and thyroid-

stimulating hormone (TSH). They controlled for such factors as maternal smoking, alcohol and drug use, and exposure to lead and pesticides.

Analysis focused on the five PBDE chemicals that were detected most frequently and are components of a mixture called pentaBDE. The researchers found that a 10-fold increase in each of the PBDE chemicals was associated with decreases in TSH ranging from 10.9 percent to 18.7 percent. When the five PBDEs were analyzed together, a tenfold increase was linked to a 16.8 percent decrease in TSH.

The study did not find a statistically significant effect of PBDE concentrations on levels of T4. With one exception, all the women in the study with low TSH levels had normal free T4 levels, which corresponds to the definition of subclinical hyperthyroidism. The study found that odds of subclinical hyperthyroidism were increased 1.9 times for each tenfold increase in PBDE concentrations.

"Low TSH and normal T4 levels are an indication of subclinical hyperthyroidism, which is often the first step leading toward clinical hyperthyroidism," said Chevrier. "Though the health effect of subclinical hyperthyroidism during pregnancy is not well understood, maternal clinical hyperthyroidism is linked to altered fetal neurodevelopment, increased risk of miscarriage, premature birth and intrauterine growth retardation."

Exactly how flame retardants influence TSH levels is unclear, the researchers said, but animal studies have shown that certain PBDEs can mimic thyroid hormones.

In addition to the commercial mixture pentaBDE, octaBDE and decaBDE have been developed for use as commercial flame retardants. PentaBDE and octaBDE have both been banned for use by the Stockholm Convention on Persistent Organic Pollutants, the European Union and eight U.S. states, including California, but they are still present in products made before 2004.

The production of decaBDE by major manufacturers is scheduled to be phased out in the United States by 2013. However, pentaBDE and decaBDE are being replaced by new brominated and chlorinated compounds whose impact on human health is not yet clear, the researchers noted.

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Lemurs lose weight with 'life-extending' supplement

The anti-obesity properties of resveratrol have been demonstrated for the first time in a primate. Researchers writing in the open access journal BMC Physiology studied the compound, generated naturally by plants to ward off pathogens, which has received much interest as a dietary supplement for its supposed life-extending effects.

Fabienne Aujard, from the Centre National de la Recherche Scientifique, Paris, France, worked with a team of researchers to investigate the effect of dietary supplementation with resveratrol on the weight, metabolism and energy intake of six mouse lemurs. She said, "The physiological benefits of resveratrol are currently under intensive investigation, with recent work suggesting that it could be a good candidate for the development of obesity therapies. **We've found that lemurs eating a diet supplemented with the compound decreased their energy intake by 13% and increased their resting metabolic rate by 29%.**"

The researchers demonstrated that a four-week resveratrol supplementation was associated with a decrease in food intake and a reduction in seasonal body-mass gain. The response to resveratrol supplementation also involved significant changes in the animals' body temperatures. According to Dr Aujard, "These results provide novel information on the potential effects of resveratrol on energy metabolism and control of body mass in a primate".

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Progesterone (NOT Progestin) is effective for hot flash treatment and provides an alternative to estrogen

Postmenopausal women who experience bothersome hot flashes or night sweats may have an alternative treatment to estrogen. According to a new study, oral micronized progesterone relieves those symptoms. The results will be presented Saturday at The Endocrine Society's 92nd Annual Meeting in San Diego.

"This is the first evidence that oral micronized progesterone, **which is molecularly identical to the natural hormone, is effective for women with symptomatic hot flashes**," said the presenting author, Jerilynn Prior, MD, professor, University of British Columbia, Vancouver, Canada.

Available only by prescription and sold under the brand name Prometrium in the United States and Canada, this form of progesterone is manufactured from a steroid in yams.

"Vasomotor symptoms"—hot flashes (sometimes called hot flushes) and night sweats—are experienced by most women during the years around the final menstrual period. In the most symptomatic women (at least 5-10%) these symptoms disturb sleep, energy and quality of life, Prior said.

The researchers recruited 114 healthy postmenopausal women seeking hormonal therapy for hot flashes and night sweats and randomly assigned them to take either oral micronized progesterone or an inactive substance (placebo), both as three round capsules at bedtime. Neither the women nor the study team members were aware which treatment the study participants received during the three months of therapy. The time since their last menstrual flow was one to 10 years, with an average of four years. To be eligible to participate in the study, women could not have taken ovarian hormone therapy within the past six months.

Prior and Christine Hitchcock, PhD, of the University of British Columbia, calculated the average daily vasomotor symptom score, or VMSScore, from the data that subjects recorded in a daily diary. This score reflects both intensity and number for hot flashes and night sweats each day.

Progesterone, in a 300-milligram dose, was more effective than placebo at decreasing the intensity and number of symptoms, the authors reported, and the difference was both statistically significant and clinically important. The 68 women taking progesterone showed a 56% improvement from baseline in VMSScore, and a 48% reduction in the number of VMS; the 46 women taking placebo had 28% lower VMSScores and a 22% reduction in number.

"Women improve very quickly on oral micronized progesterone. The improvement is apparent within the first 4 weeks," Prior said.

Micronized progesterone did not cause any serious side effects, she said. The drug may be an option for postmenopausal women who do not want to or should not take estrogen—"currently the only effective therapy for decreasing severe vasomotor symptoms," Prior said.

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Early life exposure to BPA may affect testis function in adulthood

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

"We are seeing changes in the testis function of rats after exposure to BPA levels that are lower than what

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

Many hard plastic bottles and canned food liners contain BPA, as do some dental sealants. BPA acts in a similar manner as the female sex hormone estrogen and has been linked to female infertility. This chemical is present in placenta and is able to pass from a mother into her breast milk. In their study of the male, Akingbemi and colleagues saw harmful effects of BPA at the cellular level, specifically in Leydig cells. These cells in the testis secrete testosterone, the main sex hormone that supports male fertility. After birth, Leydig cells gradually acquire the capacity for testosterone secretion, Akingbemi explained.

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

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

"Although BPA exposure stopped at 21 days of age, BPA's effects on Leydig cells, which were seen immediately at the end of exposure and at 35 days, remained apparent until 90 days of age, when the rats reached adulthood," Akingbemi said. "Therefore, the early life period is a sensitive window of exposure to BPA and exposure at this time may affect testis function into adulthood."

Ralph's Note - So 20x less than the safe EPA limit, Can mess you up for life.

Public release date: 22-Jun-2010

Coffee may protect against head and neck cancers

PHILADELPHIA — Data on the effects of coffee on cancer risk have been mixed. However, results of a recent study add to the brewing evidence that drinking coffee protects against cancer, this time against head and neck cancer.

Full study results are published online first in *Cancer Epidemiology, Biomarkers & Prevention*, a journal of the American Association for Cancer Research.

Using information from a pooled-analysis of nine studies collected by the International Head and Neck Cancer Epidemiology (INHANCE) consortium, participants who were regular coffee drinkers, that is, those who drank an estimated four or more cups a day, compared with those who were non-drinkers, had a 39 percent decreased risk of oral cavity and pharynx cancers combined.

Data on decaffeinated coffee was too sparse for detailed analysis, but indicated no increased risk. Tea intake was not associated with head and neck cancer risk.

The association is more reliable among those who are frequent, regular coffee drinkers, consuming more than four cups of coffee a day.

"Since coffee is so widely used and there is a relatively high incidence and low survival rate of these forms of cancers, our results have important public health implications that need to be further addressed," said

lead researcher Mia Hashibe, Ph.D., assistant professor in the department of family and preventive medicine at the University of Utah, Salt Lake City, and a Huntsman Cancer Institute investigator.

"What makes our results so unique is that we had a very large sample size, and since we combined data across many studies, we had more statistical power to detect associations between cancer and coffee," she said.

At the AACR Frontiers in Cancer Prevention Research Conference last December, researchers from Harvard presented data that showed a strong inverse association between coffee consumption and the risk of lethal and advanced prostate cancers — men who drank the most coffee had a 60 percent lower risk of aggressive prostate cancer than men who did not drink any coffee.

More recently, results of another study published in the January issue of *Cancer Epidemiology, Biomarkers & Prevention* showed a decreased risk of gliomas, or brain tumors, associated with coffee. This association was found among those who drank five or more cups of coffee or tea a day, according to the researchers from the Imperial College, London.

Cancer Epidemiology, Biomarkers & Prevention editorial board member Johanna W. Lampe, Ph.D., R.D., believes this current analysis by Hashibe and colleagues provides strong, additional evidence for an association between caffeinated coffee drinking and cancer risk.

"The fact that this was seen for oral and pharyngeal cancers, but not laryngeal cancers, provides some evidence as to a possible specificity of effect," said Lampe, who is a full member and associate division director in the division of public health sciences at Fred Hutchinson Cancer Research Center, Seattle., Wash.

"These findings provide further impetus to pursue research to understand the role of coffee in head and neck cancer prevention," she added. Lampe is not associated with this study.

Additional research is warranted to characterize the importance of timing and duration of exposure and possible mechanisms of action, according to Hashibe.

Public release date: 22-Jun-2010

Gut bacteria could be key indicator of colon cancer risk

A new study by researchers at the University of North Carolina at Chapel Hill School of Medicine suggests that a shift in the balance between the "good" bacteria and the "bad" bacteria that populate our gut could be a harbinger of colon cancer.

Bacteria (in red) localized to the intestinal mucus layer. Image provided by the Keku laboratory, UNC School of Medicine.

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CHAPEL HILL – The human body contains more bacteria than it does cells. These bacterial communities can have a positive effect on our health, by training our immune systems and helping to metabolize the foods we eat. But they can also set us up to develop digestive disorders, skin diseases, and obesity.

Now a new study by researchers at the University of North Carolina at Chapel Hill School of Medicine suggests that a shift in the balance between the "good" bacteria and the "bad" bacteria that populate our gut could be a harbinger of colon cancer.

The findings, which will appear online in the May/June 2010 issue of the journal *Gut Microbes*, could lead to strategies to identify people who are at high risk as well as ways to manipulate the microbiota to prevent

colon cancer.

“We think something happens to tip the balance away from the beneficial bacteria and in favor of microbes that make toxic metabolites and are detrimental to our health,” said senior study author Temitope Keku, PhD, research associate professor of medicine at UNC.

“By pinpointing these bacterial culprits, we can not only identify people at risk, but also suggest that they include the good bacteria in their diet,” added Keku. “And what a great way to address colon cancer – you could know your risk and lower it by eating your yogurt every day.”

Researchers have known for decades that the bacteria harbored in our bodies are not innocent bystanders but rather active participants in health and disease. Yet only recently have molecular methods evolved to the point that they can identify and characterize all of our microbial residents.

Keku and her colleagues used these methods to determine the different bacteria groups contained within biopsies from 45 patients undergoing colonoscopies. They uncovered a higher bacterial diversity and richness in individuals found to have adenomas than in those without these colorectal cancer precursors. In particular, a group called Proteobacteria was in higher abundance in cases than in controls, which was interesting considering that is the category where *E. coli* and some other common pathogens reside.

It is still not clear whether alterations in bacterial composition cause adenomas, or if adenomas cause this altered balance. In order to tell if it is the chicken or the egg, Keku plans to conduct more mechanistic studies, such as testing whether certain groups of bacteria promote cancer growth in animal models. She is also expanding the study to analyze samples from 600 patients using next-generation sequencing technology.

The ultimate goal may be to determine if the differences found in the mucosa lining the colon also exist in the luminal or fecal matter that passes through the colon. If so, it could mean less invasive screening for cancer and even more cancers being caught earlier, when survival rates are higher.

“We have come a long way from the time when we didn’t know our risk factors and how they impact our chances of getting colon cancer,” said Keku. “But now that we can look at bacteria and their role, it opens up a whole new world and gives us a better understanding of the entire gamut of factors involved in cancer – diet, environment, genes, and microbes.”

The UNC research was funded in part by the National Institutes of Health. Study co-authors from UNC include Xiang Jun Shen, John F. Rawls, Thomas Randall, Lauren Burcal, Caroline N. Mpande, Natascha Jenkins, Biljana Jovov, Zaid Abdo and Robert S. Sandler.

Public release date: 23-Jun-2010

Polio research gives new insight into tackling vaccine-derived poliovirus

A vaccine-derived strain of poliovirus that has spread in recent years is serious but it can be tackled with an existing vaccine

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

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

The researchers behind today's study say their findings highlight the importance of completing polio eradication. **They also say that should wild-type poliovirus be eradicated, routine vaccination with**

oral polio vaccines will need to cease, in order to prevent further vaccine-derived strains of the virus from emerging.

The study was carried out by researchers from the Medical Research Council Centre for Outbreak Analysis and Modelling at Imperial College London, working with the Government of Nigeria and the World Health Organization (WHO) research teams.

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

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

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

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

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

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

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

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

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

"However, our study shows that we can't be complacent about the virus. It's still vital for us to protect children from this dangerous and debilitating disease and we have to make sure we continue to vaccinate as many children as possible in affected countries for as long as wild-type poliovirus continues to circulate," added Ms Jenkins.

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

Dr Bruce Aylward, Director of the Global Polio Eradication Initiative at WHO, added: "These new findings

suggest that if cVDPVs are allowed to circulate for a long enough time, eventually they can regain a similar capacity to spread and paralyze as wild polioviruses. This means that they should be subject to the same outbreak response measures as wild polioviruses. These results also underscore the need to eventually stop all OPV use in routine immunization programmes after wild polioviruses have been eradicated, to ensure that all children are protected from all possible risks of polio in future."

Public release date: 23-Jun-2010

Study demonstrates pine bark naturally reduces hay fever symptoms

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

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

In a randomized, double-blind, placebo-controlled study conducted by KGK Synergize, Inc., 60 subjects between the ages of 18 and 65 began treatment three to eight weeks prior to the onset of birch allergy season in Ontario, Canada. All subjects tested positive for birch pollen allergies, a seasonal trigger of hay fever, as determined by skin prick tests. Patients were assigned to a Pycnogenol® group or placebo group according to a computer-generated, randomized schedule. Neither the patient, the investigator nor research staff was informed to which test order the subjects were assigned. Subjects were instructed to take either one 50 mg Pycnogenol® tablet or one placebo tablet twice daily, once in the morning and once in the evening throughout the allergy season. Patients were allowed to use non-prescription antihistamines as needed and recorded usage and dosage in treatment journals. The study was approved by an ethical committee as well as the "Health Canada" authorities.

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

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

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

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

Public release date: 24-Jun-2010

Stanford study uses genetic approach to manipulate microbes in gut

STANFORD, Calif. — We are what we eat, but who are "we"? New, high-powered genomic analytical techniques have established that as many as 1,000 different single-celled species coexist in relative harmony in every healthy human gut.

"For each human cell in your body there are 10 microbial cells, most of them living in the gut and helping us digest things we can't digest on our own," said Justin Sonnenburg, PhD, assistant professor of microbiology and immunology at the Stanford University School of Medicine. "In turn, what you eat is proving to be one of the major determinants of the components of your 'inner self' — that community of bacteria living in your intestine."

Each individual's microbial ecosystem is different in its relative composition, with potential implications for our health. Disorders such as inflammatory bowel disease, colorectal cancer and even obesity have been linked to skewed intestinal microbe distributions.

Scientists hope that someday they will be able to manipulate microbial populations in the gut as a way of remedying disease and enhancing health. One step toward this goal would be taking "genomic censuses" to categorize and count the interacting components of each individual's bacterial community and characterize how they respond to interventions, such as changes in diet. That's no small task, because the aggregate gene count of the micro-organisms dwelling in a typical human gut outnumbers our own by a hundredfold — millions of them, versus the 20,000 human genes that have been identified.

In an animal study to be published June 25 in *Cell*, Sonnenburg and his colleagues showed that zeroing in on just a small set of bacterial genes, while ignoring the vast majority, allowed them to predict how bugs would respond to a diet change. The results highlight the potential of the burgeoning new field of prebiotics, which (in contrast to probiotics — the seeding of food with healthful bacterial organisms) involves adding substances to the diet in an effort to shift the mix of bugs in our gut in a healthy direction.

In conducting the study, the researchers used a vastly simplified model of the internal mammalian microbial ecosystem to prove that they could predict, by looking at a mere handful of microbial genes, how a shift in diet can alter the microbial composition of the gut. Sonnenburg's team introduced two distinct species of bacteria, both known to abound in the human digestive tract, into mice that had been raised in a sterile environment and so lack the normally resident microbes — also known as "germ-free" mice. Then they fed the mice a diet rich in a particular complex carbohydrate that one bacterial species seemed genetically better equipped to digest, based on the presence of a small set of genes in its genome. As predicted, that bacterial species became predominant in the mice's intestines.

These results set the stage for scaling up germ-free mice into living laboratories into which scientists can introduce, one by one, steadily increasing numbers of bacteria found in the human intestine, eventually enabling a sophisticated understanding of the astonishingly complex microbial superorganism that dwells inside each of us.

The complex carbohydrate the Stanford researchers added to the mice's diet was inulin, which is found in certain bulbous plants — onions, garlic, Jerusalem artichokes — and has gained wide use as a prebiotic supplement (for instance, in yogurt or in powdered form) by people who believe it encourages the proliferation of healthful "good" bacteria. We humans can't digest inulin on our own, but some bacteria are equipped with genes that encode enzymes capable of sawing through the chemical links joining this substance's constituent sugar molecules.

"Think of these enzymes as a unique set of utensils that allow them to eat this food we can't cut," said Sonnenburg. The byproducts of bacterial metabolism are often valuable nutrients for humans — a win-win situation.

Previous genomic analyses had determined that only one of the two bacterial species the investigators introduced to the germ-free mice featured, among its 5,000 or so genes, a roughly 10-gene assemblage that permits the breakdown of inulin.

The researchers used a standard laboratory technique to precisely assess changes in each of the two species' relative abundance before and after dietary inulin supplementation. "Within one or two weeks, there was a significant change in the composition of the mice's gut communities," said Erica Sonnenburg, PhD, senior research scientist in Justin Sonnenburg's lab and first author of the study. As predicted, the ratio of inulin-digesting to non-digesting species shifted in favor of the former in the inulin-fed mice.

Both Erica and Justin Sonnenburg (they're married) warned that it will be a while before the results in this simple experimental system — two competing bacterial species — can be extrapolated to the nearly-1,000-species jungle that is the real, human gut-dwelling microbial community. But the Sonnenburg lab has already embarked on increasing the complexity of their experimental system by increasing the number of human-associated bacteria into germ-free mice that have been "humanized" so that their intestines contain a microbial community similar to that of the human gut.

"We've now got germ-free mice to which we've introduced batches of bacteria representative of an entire human gut community in all its complexity," said Erica Sonnenburg. "We're looking to see if the bugs that we think should do better actually do better in this more competitive environment."

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Breast milk transmits drugs and medicines to the baby

There is great confusion among the scientific community about whether women who are drug abusers should breast feed their babies. In order to shed some light on this issue, scientists from various Spanish hospitals and research centres are reviewing the methods used to detect substances in breast milk, their adverse effects, and the recommendations that mothers should follow in this month's issue of the journal *Analytical and Bioanalytical Chemistry*.

"The general recommendation is to totally avoid drug abuse while breastfeeding, because these substances can pass directly through to the newborn", Óscar García Algar, co-author of the study and a doctor in the Paediatrics Department at the Hospital del Mar in Barcelona, tells SINC.

The researcher adds: "This recommendation extends to the prenatal period, because these substances are passed on to the foetus via the placenta, and then in the postnatal period via the environment. If they have exposure through the milk, they will certainly also have had it during the pregnancy, and they can also be in the environment, as is the case with tobacco smoke".

For this study, the team used the average daily intake of the breastfeeding baby, around 150 millilitres of milk per kilo of weight, as a benchmark. The recommendations are listed for each substance, taking the advice of the American Academy of Pediatrics (AAP) as a reference.

Nicotine, caffeine and alcohol

The breast milk of smoking mothers contains between 2 and 240 nanograms of nicotine per millilitre, which means their babies receive a dose equivalent to 0.3 to 36 micrograms/kg/day. These infants tend to suffer more from colic and are more prone to respiratory infections.

The advice is to give up smoking during pregnancy and breastfeeding, or at least to limit the habit as much as possible, extend the time between the last cigarette and the baby's feed, use nicotine patches, smoke outside the house and avoid smoky environments.

Caffeine – found in coffee, tea, cola drinks and medicines – can cause irritability and insomnia. Although the level of caffeine absorption varies greatly from one person to another, this substance has a lengthy half-life in newborns. For this reason, it is recommended to reduce consumption during breastfeeding to a maximum of 300 mg/day, equivalent to around three cups of coffee per day.

For alcohol, the exact risk is still ill-defined, and no studies have been carried out to correlate the dose, although some research suggests it can harm the infant's motor development, as well as causing changes to their sleep patterns, reduce the amount they eat, and increase the risk of hypoglycaemia.

The AAP feels that alcohol consumption is compatible with breastfeeding, but this study states that no amount can be considered safe until the levels in breast milk are established. Strategies for minimising risk include feeding the baby before consuming alcoholic drinks, or at least allowing two or three hours to pass after drinking. Alcoholic women are advised to feed their babies with a bottle.

The risks of alcohol to the foetus in pregnant women have already been shown. "But despite this, a recent study by our group showed that 45.7% of the women who came to give birth in our hospital had consumed considerable amounts of alcohol during pregnancy", says the doctor.

Cannabis, cocaine and other drugs

Cannabis, which is transmitted both through the mother's milk and smoke, can cause sedation, lethargy, weakness and poor feeding habits in breastfeeding babies. The long-term risks are also unknown. Women are advised not to use it, but if they use marijuana occasionally, the experts advise them to do so several hours before feeding, and not to expose their children to the smoke.

The advice on cocaine, meanwhile, is to "totally avoid it" during breastfeeding. The first case of toxicity caused by this drug through breast milk was a baby boy just two weeks old who suffered irritability, trembling, dilated pupils, tachycardia and high blood pressure after feeding.

Women are also advised against breastfeeding if they take amphetamines. These can cause agitation, crying and lack of sleep. Using them also reduces a mother's ability to care for her children.

Breastfeeding is not recommended either for women who use heroin, which is excreted into the milk in sufficient amounts to cause addiction in the baby. In the case of "need", the advice is to allow at least one or two days to pass after taking the drug before feeding the baby, and to start a substitute treatment as soon as possible, if possible with methadone.

Other opiates used as medicines – morphine, meperidine and codeine – are excreted into the milk in minimal amounts and are compatible with breastfeeding, as are benzodiazepines, as long as they are taken in controlled doses. These are the drugs most frequently prescribed to women during pregnancy and after birth.

In terms of anti-depressant and anti-psychotic drugs, the AAP says "these can be a cause for concern during breastfeeding". For now, their effects on breastfeeding babies are unknown, and further studies are recommended.

Public release date: 25-Jun-2010

Ingredient in red wine may prevent some blinding diseases

Resveratrol inhibits formation of damaging blood vessels in mouse retina
By Jim Dryden

Resveratrol — found in red wine, grapes, blueberries, peanuts and other plants — stops out-of-control blood vessel growth in the eye, according to vision researchers at Washington University School of Medicine in St. Louis.

The discovery has implications for preserving vision in blinding eye diseases such as diabetic retinopathy and age-related macular degeneration, the leading cause of blindness in Americans over 50.

The formation of new blood vessels, called angiogenesis, also plays a key role in certain cancers and in atherosclerosis. Conducting experiments in mouse retinas, the researchers found that resveratrol can inhibit angiogenesis. Another surprise was the pathway through which resveratrol blocked angiogenesis. The findings are reported in the July issue of the American Journal of Pathology.

“A great deal of research has identified resveratrol as an anti-aging compound, and given our interest in age-related eye disease, we wanted to find out whether there was a link,” says Washington University retina specialist Rajendra S. Apte, MD, PhD, the study’s senior investigator. “There were reports on resveratrol’s effects on blood vessels in other parts of the body, but there was no evidence that it had any effects within the eye.”

The investigators studied mice that develop abnormal blood vessels in the retina after laser treatment. Apte’s team found that when the mice were given resveratrol, the abnormal blood vessels began to disappear.

Examining the blood-vessel cells in the laboratory, they identified a pathway — known as a eukaryotic elongation factor-2 kinase (eEF2) regulated pathway — that was responsible for the compound’s protective effects. That was a surprise because past research involving resveratrol’s anti-aging effects had implicated a different mechanism that these experiments showed not to be involved.

“We have identified a novel pathway that could become a new target for therapies,” Apte says. “And we believe the pathway may be involved both in age-related eye disease and in other diseases where angiogenesis plays a destructive role.”

Previous research into resveratrol’s influence on aging and obesity had identified interactions between the red-wine compound and a group of proteins called sirtuins. Those proteins were not related to resveratrol’s effects on abnormal blood vessel formation. Instead, the researchers say that in addition to investigating resveratrol as a potential therapy, they also want to look more closely at the eEF2 pathway to determine whether it might provide a new set of targets for therapies, both for eye disease and other problems related to abnormal angiogenesis.

Apte, an assistant professor of ophthalmology and visual sciences and of developmental biology, says because resveratrol is given orally, patients may prefer it to many current treatments for retinal disease, which involve eye injections. The compound also is easily absorbed in the body.

In mice, resveratrol was effective both at preventing new blood vessels and at eliminating abnormal blood vessels that already had begun to develop.

“This could potentially be a preventive therapy in high-risk patients,” he says. “And because it worked on

existing, abnormal blood vessels in the animals, it may be a therapy that can be started after angiogenesis already is causing damage."

Apte stresses that the mouse model of macular degeneration they used is not identical to the disease in human eyes. In addition, the mice received large resveratrol doses, much more than would be found in several bottles of red wine. If resveratrol therapy is tried in people with eye disease, it would need to be given in pill form because of the high doses required, Apte says.

There are three major eye diseases that resveratrol treatment may help: age-related macular degeneration, diabetic retinopathy and retinopathy of prematurity. Age-related macular degeneration involves the development of abnormal blood vessels beneath the center of the retina. It accounts for more than 40 percent of blindness among the elderly in nursing homes, and as baby boomers get older, the problem is expected to grow, with at least 8 million cases predicted by the year 2020.

In diabetic retinopathy, those blood vessels don't develop beneath the retina. They grow into the retina itself. Diabetic retinopathy causes vision loss in about 20 percent of patients with diabetes. Almost 24 million people have diabetes in the United States alone.

Retinopathy of prematurity occurs when premature babies with immature retinas experience an obstruction in blood flow into the retina. In response, those children often develop abnormal blood vessels that can cause retinal detachment and interfere with vision. Worldwide, that condition blinds 50,000 newborn babies each year.

Apte says the pathway his laboratory has identified may be active not only in those blinding eye diseases, but in cancers and atherosclerosis as well. If so, then one day it might be possible to use resveratrol to improve eyesight and to prevent cardiovascular disease and some types of cancer, too.

Public release date: 25-Jun-2010

Vitamin D and mental agility in elders

At a time when consumer interest in health-enhancing foods is high, Agricultural Research Service (ARS)-funded scientists have contributed to a limited but growing body of evidence of a link between vitamin D and cognitive function.

Cognitive function is measured by the level at which the brain is able to manage and use available information for activities of daily life. Alzheimer's disease, the most common form of age-related dementia, affects about 47 percent of adults aged 85 years or older in the United States. Identifying nutritional factors that lower cognitive dysfunction and help preserve independent living provides economic and public health benefits, according to authors.

The study, which was supported by ARS, the National Institutes of Health, and others, was led by epidemiologist Katherine Tucker with the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts University in Boston, Mass. Tucker collaborated with HNRCA laboratory directors Irwin Rosenberg, Bess Dawson-Hughes and colleagues.

Metabolic pathways for vitamin D have been found in the hippocampus and cerebellum areas of the brain involved in planning, processing, and forming new memories. This suggests that vitamin D may be implicated in cognitive processes.

The study involved more than 1,000 participants receiving home care. The researchers evaluated associations between measured vitamin D blood concentrations and neuropsychological tests. Elders requiring home care have a higher risk of not getting enough vitamin D because of limited sunlight exposure and other factors.

The participants, ages 65 to 99 years, were grouped by their vitamin D status, which was categorized as deficient, insufficient, or sufficient. **Only 35 percent had sufficient vitamin D blood levels.** They had better cognitive performance on the tests than those in the deficient and insufficient categories, particularly on measures of "executive performance," such as cognitive flexibility, perceptual complexity, and reasoning. The associations persisted after taking into consideration other variables that could also affect cognitive performance.

The 2009 study appears in the Journals of Gerontology, Series A, Biological Sciences and Medical Sciences.

Public release date: 29-Jun-2010

Study shows how dietary supplement may block cancer cells

COLUMBUS, Ohio – Researchers at the Ohio State University Comprehensive Cancer Center-Arthur G. James Cancer Hospital and Richard J. Solove Research Institute (OSUCCC-James) have discovered how a substance that is produced when eating broccoli and Brussels sprouts can block the proliferation of cancer cells.

Compelling evidence indicates that the substance, indole-3-carbinol (I3C), may have anticancer effects and other health benefits, the researchers say. These findings show how I3C affects cancer cells and normal cells.

The laboratory and animal study discovered a connection between I3C and a molecule called Cdc25A, which is essential for cell division and proliferation. The research showed that I3C causes the destruction of that molecule and thereby blocks the growth of breast cancer cells.

The study was published online June 29 in the journal Cancer Prevention Research.

"Cdc25A is present at abnormally high levels in about half of breast cancer cases, and it is associated with a poor prognosis," says study leader Xianghong Zou, assistant professor of pathology at the Ohio State University Medical Center.

The molecule also occurs at abnormally high levels in cancers of the breast, prostate, liver, esophagus, endometrium and colon, and in non-Hodgkin lymphoma, and in other diseases such as Alzheimer's disease, he noted.

"For this reason, a number of anti-Cdc25 agents have been identified, but they have not been successful for cancer prevention or treatment due to concerns about their safety or efficacy," says Zou, who is also a member of the OSUCCC-James Molecular Carcinogenesis and Chemoprevention program.

"I3C can have striking effects on cancer cells," he explains, "and a better understanding of this mechanism may lead to the use of this dietary supplement as an effective and safe strategy for treating a variety of cancers and other human diseases associated with the overexpression of Cdc25A," Zou says.

For this study, Zou and his colleagues exposed three breast cancer cell lines to I3C. These experiments revealed that the substance caused the destruction of Cdc25A. They also pinpointed a specific location on that molecule that made it susceptible to I3C, showing that if that location is altered (because of a gene mutation), I3C no longer causes the molecule's destruction.

Last, the investigators tested the effectiveness of I3C in breast tumors in a mouse model. When the substance was given orally to the mice, it reduced tumor size by up to 65 percent. They also showed that I3C had no effect on breast-cell tumors in which the Cdc25A molecule had a mutation in that key location.

Public release date: 30-Jun-2010

Virgin olive oil and a Mediterranean diet fight heart disease by changing how our genes function

New research in the FASEB Journal suggests that the polyphenols in virgin olive oil modify the expression of atherosclerosis-related genes, leading to health benefits

Everyone knows olive oil and a Mediterranean diet are associated with a lower risk for cardiovascular disease, but a new research report published in the July 2010 print issue of the FASEB Journal (<http://www.fasebj.org>) offers a surprising reason why: These foods change how genes associated with atherosclerosis function.

"Knowing which genes can be modulated by diet in a healthy way can help people select healthy diets," said Maria Isabel Covas, D.Pharm., Ph.D., a researcher involved in the work from the Cardiovascular Risk and Nutrition Research Group at the Institut Municipal d'Investigacio Medica in Barcelona, Spain. "It is also a first step for future nutritional therapies with selected foods."

Scientists worked with three groups of healthy volunteers. The first group consumed a traditional Mediterranean diet with virgin olive oil rich in polyphenols. The second group consumed a traditional Mediterranean diet with an olive oil low in polyphenols. The third group followed their habitual diet. After three months, the first group had a down-regulation in the expression of atherosclerosis-related genes in their peripheral blood mononuclear cells. Additionally, the olive oil polyphenols made a significant impact on the expression of genetic changes influencing coronary heart disease. Results also showed that the consumption of virgin olive oil in conjunction with a Mediterranean diet can positively impact lipid and DNA oxidation, insulin resistance, inflammation, carcinogenesis, and tumor suppression.

"This study is ground breaking because it shows that olive oil and a Mediterranean diet affect our bodies in a far more significant way than previously believed," said Gerald Weissmann, M.D., Editor-in-Chief of the FASEB Journal. "Not only does this research offer more support for encouraging people to change their eating habits, it is an important first step toward identifying drug targets that affect how our genes express themselves."

Public release date: 30-Jun-2010

Honey as an antibiotic: Scientists identify a secret ingredient in honey that kills bacteria

New research in the FASEB Journal shows that defensin-1, a protein added to honey by bees, possesses potent antibacterial properties and could be used against drug-resistant bacteria

Sweet news for those looking for new antibiotics: A new research published in the July 2010 print edition of the FASEB Journal (<http://www.fasebj.org>) explains for the first time how honey kills bacteria.

Specifically, the research shows that bees make a protein that they add to the honey, called defensin-1, which could one day be used to treat burns and skin infections and to develop new drugs that could combat antibiotic-resistant infections.

"We have completely elucidated the molecular basis of the antibacterial activity of a single medical-grade honey, which contributes to the applicability of honey in medicine," said Sebastian A.J. Zaat, Ph.D., a researcher involved in the work from the Department of Medical Microbiology at the Academic Medical Center in Amsterdam. "Honey or isolated honey-derived components might be of great value for prevention and treatment of infections caused by antibiotic-resistant bacteria."

To make the discovery, Zaat and colleagues investigated the antibacterial activity of medical-grade honey in test tubes against a panel of antibiotic-resistant, disease-causing bacteria. They developed a method to

selectively neutralize the known antibacterial factors in honey and determine their individual antibacterial contributions. Ultimately, researchers isolated the defensin-1 protein, which is part of the honey bee immune system and is added by bees to honey. After analysis, the scientists concluded that the vast majority of honey's antibacterial properties come from that protein. This information also sheds light on the inner workings of honey bee immune systems, which may one day help breeders create healthier and heartier honey bees.

"We've known for millennia that honey can be good for what ails us, but we haven't known how it works," said Gerald Weissmann, M.D., Editor-in-Chief of the FASEB Journal, "Now that we've extracted a potent antibacterial ingredient from honey, we can make it still more effective and take the sting out of bacterial infections."

Public release date: 30-Jun-2010

New insights into link between anti-cholesterol statin drugs and depression

Scientists are reporting a possible explanation for the symptoms of anxiety and depression that occur in some patients taking the popular statin family of anti-cholesterol drugs, and reported by some individuals on low-cholesterol diets. These symptoms could result from long-term, low levels of cholesterol in the brain, the report suggests. It appears in ACS' weekly journal *Biochemistry*.

Amitabha Chattopadhyay and colleagues note in the study that statins work by blocking a key enzyme involved in the body's production of cholesterol. Some studies link the drugs to an increased risk of anxiety and depression, but the reasons are unclear. The scientists previously showed that maintaining normal cholesterol levels is important for the function of cell receptors for serotonin, a brain hormone that influences mood and behavior. But the long-term effect of cholesterol depletion on these receptors, which can occur in patients taking anti-cholesterol drugs, is unknown.

The scientists turned to the statin medication mevastatin to find out. In lab tests using human serotonin receptors expressed in animal cells, they showed that long-term use of the drug caused significant changes in the structure and function of serotonin cell receptors. Adding cholesterol to cells treated with mevastatin restored them to normal. The results represent the first report describing the effect of long-term cholesterol depletion on this type of cell receptor and suggest that chronic, low cholesterol levels in the brain might trigger anxiety and depression, the scientists say.

Public release date: 30-Jun-2010

HIGH FRUCTOSE DIET MAY CONTRIBUTE TO HIGH BLOOD PRESSURE

Eating Foods High in Fructose from Added Sugars Linked to Hypertension
Washington, DC (June 25, 2010) — People who eat a diet high in fructose, in the form of added sugar, are at increased risk of developing high blood pressure, or hypertension, according to a study appearing in an upcoming issue of the *Journal of the American Society Nephrology (JASN)*. The results suggest that cutting back on foods and beverages containing a lot of fructose (sugar) might decrease one's risk of developing hypertension.

Hypertension is the most common chronic condition in developed countries and a major risk factor for heart and kidney diseases. Researchers are striving to identify environmental factors that might be responsible for the development of hypertension, and they suspect that fructose may play a role. Over the past century, a dramatic

increase in the consumption of this simple sugar, which is used to sweeten a wide variety of processed foods, mirrors the dramatic rise in the prevalence of hypertension.

To examine whether increased fructose consumption has contributed to rising rates of hypertension, Diana Jalal, MD (University of Colorado Denver Health Sciences Center) and her colleagues analyzed data from the National Health and Nutrition Examination Survey (2003-2006). The study involved 4,528 US adults 18 years of age or older with no prior history of hypertension. Study participants answered questions related to their consumption of foods and beverages such as fruit juices, soft drinks, bakery products, and candy. **Dr. Jalal's team found that people who consumed a diet of 74 grams or more per day of fructose (corresponding to 2.5 sugary soft drinks per day) had a 26%, 30%, and 77% higher risk for blood pressure levels of 135/85, 140/90, and 160/100 mmHg, respectively. (A normal blood pressure reading is below 120/80 mmHg.)**

"Our study identifies a potentially modifiable risk factor for high blood pressure. However, well-planned prospective randomized clinical studies need to be completed to see if low fructose diets will prevent the development of hypertension and its complications," said Dr. Jalal.

Public release date: 1-Jul-2010

Low vitamin D linked to the metabolic syndrome in elderly people

A new study adds to the mounting evidence that older adults commonly have low vitamin D levels and that vitamin D inadequacy may be a risk factor for the metabolic syndrome, a condition that affects one in four adults. The results were presented at The Endocrine Society's 92nd Annual Meeting in San Diego.

"Because the metabolic syndrome increases the risk of diabetes and cardiovascular disease, an adequate vitamin D level in the body might be important in the prevention of these diseases," said study co-author Marelise Eekhoff, MD, PhD, of VU University Medical Center, Amsterdam.

The researchers found a 48 percent prevalence of vitamin D deficiency. The study consisted of a representative sample of the older Dutch population: nearly 1,300 white men and women ages 65 and older.

Nearly 37 percent of the total sample had the metabolic syndrome, a clustering of high blood pressure, abdominal obesity, abnormal cholesterol profile and high blood sugar.

Subjects with blood levels of vitamin D (serum 25-hydroxyvitamin D) lower than 50 nanomoles per liter, considered vitamin D insufficiency, were likelier to have the metabolic syndrome than those whose vitamin D levels exceeded 50. That increased risk especially stemmed from the presence of two risk factors for the metabolic syndrome: low HDL, or "good" cholesterol, and a large waistline.

There was no difference in risk between men and women, the authors noted.

The study included subjects who were participating in the Longitudinal Aging Study Amsterdam. Although the data were from 1995 and 1996, Eekhoff said they expect that vitamin D inadequacy remains prevalent among whites in the Netherlands.

Using follow-up data from 2009, the researchers plan to study how many of the subjects with low vitamin D levels developed diabetes.

"It is important to investigate the exact role of vitamin D in diabetes to find new and maybe easy ways to prevent it and cardiovascular disease," Eekhoff said.

Public release date: 1-Jul-2010

Increasing Fertility Threefold

TAU finds anti-aging supplement is a fountain of hope for would-be mothers

According to the American Pregnancy Association, six million women a year deal with infertility. Now, a Tel Aviv University study is giving new hope to women who want to conceive — in the form of a pill they can find on their drugstore shelves right now.

Prof. Adrian Shulman of Tel Aviv University's Sackler Faculty of Medicine and the Meir Medical Center has found a statistical connection between the over-the-counter vitamin supplement DHEA, used to counter the effects of aging, and successful pregnancy rates in women undergoing treatment for infertility.

In the first controlled study on the effects of the supplement, Prof. Shulman found that **women being treated for infertility who also received supplements of DHEA were three times more likely to conceive than women being treated without the additional drug.** The results were recently published in AYALA, the journal of the Israeli Fertility Association.

A natural supplement to fertility treatments

After hearing anecdotal evidence from his patients and the medical community on the benefits of combining fertility treatments with DHEA, a supplement marketed as an anti-aging drug around the world, Prof. Shulman decided to put this old wives' tale to the statistical test.

He and his fellow researchers conducted a study in which a control group of women received treatment for poor ovulation, and another group received the same treatment with the addition of the DHEA supplement. **The latter group took 75mg of the supplement daily for 40 days before starting fertility treatments, and continued for up to five months.**

Not only were women who combined infertility treatment with DHEA more likely to conceive, the researchers discovered, they were also more likely to experience a healthy pregnancy and delivery.

"In the DHEA group, there was a 23% live birth rate as opposed to a 4% rate in the control group," explains Shulman. "More than that, of the pregnancies in the DHEA group, all but one ended in healthy deliveries."

Making grade-A eggs?

Shulman believes that women who are finding little success with their current fertility

treatments could look to DHEA to improve their chances of conceiving. "We recommend that women try this DHEA treatment, in conjunction with fertility treatments, for four to five months," says Prof. Shulman. It could also be used as a regular "vitamin" for women who have already conceived and are pregnant, but more research would need to be done on the compound to determine its effects, says Prof. Shulman.

DHEA, for 5-Dehydroepiandrosterone (5-DHEA), is a naturally-occurring steroid found in the brain, which plays an important biological role in humans and other mammals. Produced in the adrenal glands, it is also synthesized in the brain. The pharmaceutical version of this molecule is known as Prastera, Prasterone, Fidelin and Fluasterone, and identical generics are widely available over the counter in the United States without a prescription. Women interested in using DHEA to conceive, however, should consult their practitioner first, suggests Prof. Shulman, a gynecologist and director of the IVF Unit of the Obstetric and Gynecology Department at Meir Medical Center.

While studies on the effects of DHEA are far from complete — his test group only included around 20 women — Prof. Shulman hopes that further research will unlock the secrets of why the supplement aids in successful conception in women with an otherwise poor response to fertility treatments. "We need to look into what the drug actually does to make the body more fertile," he says. "It could be affecting components such as the quality of the eggs or the follicles."

Public release date: 5-Jul-2010

Antioxidants do help arteries stay healthy

Long-term supplementation with dietary antioxidants has beneficial effects on sugar and fat metabolism, blood pressure and arterial flexibility in patients with multiple cardiovascular risk factors. **Researchers writing in BioMed Central's open access journal Nutrition and Metabolism report these positive results in a randomized controlled trial of combined vitamin C, vitamin E, coenzyme Q10 and selenium capsules.**

Reuven Zimlichman worked with a team of researchers from Wolfson Medical Center, Israel, to carry out the study in 70 patients from the centre's hypertension clinic. He said, "Antioxidant supplementation significantly increased large and small artery elasticity in patients with multiple cardiovascular risk factors. This beneficial vascular effect was associated with an improvement in glucose and lipid metabolism as well as significant decrease in blood pressure".

Previous results from clinical trials into the cardiovascular health effects of antioxidants have been equivocal. In order to shed more light onto the matter, Zimlichman and his colleagues **randomised the 70 patients to receive either antioxidants or placebo capsules for six months. Tests at the beginning of the trial, after three months and at the six month mark revealed that the patients in the antioxidant group had more elastic arteries (a measure of increased cardiovascular health) and better blood**

sugar and cholesterol profiles. According to Zimlichman, "The findings of the present study justify investigating the overall clinical impact of antioxidant treatment in patients with multiple cardiovascular risk factors".

Public release date: 5-Jul-2010

Cocoa flavanols could more than double cells associated with repair and maintenance of blood vessels, according to Mars Inc. research

First-of-its-kind research suggests cocoa flavanols could be an important part of a healthy diet for people with cardiovascular disease

McLean, VA (July 5, 2010) – New findings indicate that cocoa flavanols may be an important part of a healthy diet for people with cardiovascular disease, which affects more than 80 million Americans, according to research by a team of internationally-renowned researchers, including scientists from Mars, Incorporated.

The breakthrough study conducted at the University of California San Francisco and published in the prestigious Journal of the American College of Cardiology (JACC) found that daily cocoa flavanol consumption more than doubled the number of circulating angiogenic cells (CACs) in the blood. These cells have been shown to have vessel repair and maintenance functions, which can contribute to healthy blood vessels. Poor blood vessel function is recognized as an early stage in the development process of cardiovascular diseases (CVD), including coronary artery disease. Increasing levels of CACs have also been associated with a decreased risk of death from cardiovascular causes, according to a 2005 study published in the New England Journal of Medicine.

Other cutting-edge research has demonstrated that physical activity and experimental drug therapy can increase CAC levels, however the study published in JACC is the first to demonstrate such benefits from a dietary intervention. In this randomized, double-masked, controlled dietary intervention trial, study participants drank either a high-flavanol cocoa drink, containing cocoa made with the Mars Cocopro® process (which guarantees a consistent flavanol level), or a low-flavanol nutrient-matched control cocoa drink, twice a day for 30 days.

The study also showed that drinking high-flavanol cocoa significantly reduced systolic blood pressure, an important risk factor for heart disease and stroke, and improved blood vessel function by 47% compared to low-flavanol consumption in optimally-medicated adults with severe cardiovascular disease. This research supports findings previously published by Mars scientists and their academic collaborators, who have found a positive correlation between cocoa flavanols consumed and subsequent improvements in flow-mediated dilation (FMD), a measure of vessel health, i.e. the ability of a vessel to relax.

"It's the best of both worlds. It's not often that we're able to identify a natural food compound that can demonstrate a benefit on top of traditional medical treatment," said Carl Keen, PhD, Professor of Nutrition and Internal Medicine at University of California Davis and one of the study authors. "And perhaps most importantly, for the first time, we found that cocoa flavanols might even directly mobilize important cells that could repair damaged blood vessels. The benefits are substantial, without any observed adverse effects," added study author Christian Heiss, MD, Heinrich-Heine University.

"Together with academic partners, Mars Incorporated has been studying cocoa flavanols for nearly two decades," said Hagen Schroeter, PhD, Mars, Incorporated scientist and study co-author. "This is one of the most fascinating and potentially far-reaching findings we've uncovered in recent years, opening a completely new avenue of research to understand how cocoa flavanols might benefit human health. Of course, more research is needed to confirm and build upon these observations, but we're intrigued by the potential for flavanols in the context of dietary and pharmaceutical strategies for the prevention and treatment of cardiovascular diseases."

Cocoa Flavanols: The Body of Evidence

A number of previously published studies already suggest that the consumption of cocoa flavanols can have important beneficial effects on the function of the body's network of blood vessels. Yet, contrary to statements often made in the popular media, the collective research demonstrates that the cardiovascular effects of cocoa flavanols are independent of general "antioxidant" effects that cocoa flavanols exhibit in a test tube, outside of the body. The body of research not only suggests that these cocoa flavanols may provide a dietary approach to maintaining cardiovascular function and health, but also points to new possibilities for cocoa flavanol-based interventions associated with age-related blood vessel dysfunction and vascular complications of type 2 diabetes.

**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.**