Study shows small dietary changes may improve diabetes risk in Latino teens

By Meghan Lewit

Reducing sugar intake by the equivalent of one can of soda per day and increasing fiber intake by the amount equivalent to one half cup of beans per day appears to improve risk factors associated with type 2 diabetes in Latino adolescents, according to researchers at the Keck School of Medicine.

The report appears in the April issue of Archives of Pediatrics & Adolescent Medicine, one of the JAMA/Archives journals.

Almost 40 percent of Mexican American adolescents age 12 to 19 were overweight or at risk for overweight from 2003 to 2006, according to background information in the article. "Latino children are more insulin resistant and thus more likely to develop obesity-related chronic diseases than their white counterparts," the authors wrote. "To date, only a few studies have examined the effects of a high-fiber, low-sugar diet on metabolic health in overweight youth, and to our knowledge, none have tested the effects of this type of intervention in a mixed-sex group of Latino youth."

Emily Ventura, of the Keck School of Medicine, and colleagues conducted a 16-week study to examine if reductions in added sugar intake or increases in fiber intake would affect risk factors for developing type 2 diabetes in 54 overweight Latino adolescents (average age 15.5). Participants were split into three groups: control, nutrition (receiving one nutrition class per week) or nutrition plus strength training (receiving one nutrition class per week along with strength training twice a week).

Fifty-five percent of participants decreased their sugar intake by an average of 47 grams per day (equal to the sugar in one can of soda) and 59 percent increased their fiber intake by an average of 5 grams per day (equal to the fiber in a half cup of beans) across all intervention groups, including controls.

Participants who decreased their sugar intake had an average 34 percent decrease in insulin secretion and those who increased their fiber intake had an average 10 percent reduction in volume of visceral adipose tissue — fat surrounding the internal organs. "A reduction in visceral fat indicates a reduction in risk for type 2 diabetes, considering that to a greater degree than total body fat, visceral fat has been shown to be negatively associated with insulin sensitivity," the authors noted. "Those who increased fiber intake had a significant reduction in body mass index (-2 percent vs. 2 percent) and visceral adipose tissue (-10 percent vs. no change) compared with those who decreased fiber intake," the authors wrote.

"This study shows that over-weight teenagers make small simple changes in dietary intake they can lead to meaningful effects on optimizing the metabolic state that reduces risk of type 2 diabetes," said Principal Investigator Michael J. Goran, professor of preventive medicine, physiology and biophysics, and director of the USC Childhood Obesity Research Center at the Keck School of Medicine.
USC study examines links between obesity and adolescents’ social networks

By Katie Heath

Researchers from the Institute of Prevention Research at the Keck School of Medicine have found a link between obesity and social networks among adolescents. In fact, overweight youth were twice as likely to have overweight friends. “Although this finding was expected, it was surprising how strong the peer effect is and how early in life it starts,” said lead author Thomas Valente, professor of preventive medicine at the Keck School.

Previous data had shown a connection between overweight adults and their social peers, but the study used more advanced statistical modeling techniques than previous research and the association remained strong, Valente said. In-school surveys were conducted among 617 students ages 11-13. In addition to finding that overweight adolescents were more likely to have overweight friends than their non-overweight peers, the researchers also found that overweight girls were more likely to name more friends, but less likely to be named as a friend than normal-weight girls.

“Such information opens up a whole new chapter, not only in our understanding of lupus, but also undoubtedly in the development of new therapies for both the treatment and prevention of the disease,” said Jacob.

The identification of the IRAK1 gene came as a result of the new methodological approach termed “Function2Gene,” which was devised by Jacob and his team, Raphael Zidovetzki, and Don Amstberg. This approach looks at what is functionally known about the disease and progresses from potential function to genes, in contrast to the conventional method, which identifies genes and then characterizes their potential function in a disease. The identification of IRAK1 coincides with two additional studies, also led by Jacob and his team, that recognize roles of several genes in the progression and development of lupus. The studies published in the journals Arthritis & Rheumatism (April 2009) and Gene Immunochemistry & Therapy, both confirmed the crucial role of certain previously known genes in SLE development, as well as identified several novel genes not previously reported.

The new Function2Gene approach may have a major impact on how researchers go about discovering the multiple genetic variations that commonly underlie inherited diseases. The Function2Gene approach has the benefit of being more productive than traditional methods, and is also less costly. According to Jacob, this approach may be very valuable to researchers studying other genetic diseases. “This may be my and my colleagues’ greatest contribution,” he said. “This method is ideally suited to unraveling the genetic aspects of such common disorders as diabetes, hypertension, atherosclerosis, cancer and other diseases.” Jacob and his team have made the Function2Gene software available free of charge to the scientific community so that it may be applied to other complex diseases. Jacob and his team have made the Function2Gene software available free of charge to the scientific community so that it may be applied to other complex diseases. Jacob and his team have made the Function2Gene software available free of charge to the scientific community so that it may be applied to other complex diseases.

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USC researchers pinpoint gene key to lupus development

By Sara Rovee

A study led by USC researchers has identified a specific gene—IRAK1—as playing a critical role in the development of systemic lupus erythematosus. The results were published April 14 in the Proceedings of the National Academy of Sciences. This publication is one of three new papers that the USC Lupus Genetic Group is publishing in a short span of time in which application of the “Function2Gene” methodology have resulted in identifying several new genes, involved in lupus.

Systemic lupus erythematosus (SLE or lupus) is an autoimmune disease that can affect various parts of the body, including the skin, joints, heart, lungs, blood, kidneys and brain, causing inflammation, swelling, pain and damage. “Lupus is a relatively rare systemic autoimmune disease affecting an estimated 0.1 percent of the general population, but those afflicted, it is a devastating and even life-threatening condition,” said lead author Chaim O. Jacob, associate professor in the Department of Medicine at the Keck School of Medicine. “Because it usually attacks young women—nine-to-one predilection of females to males—in the prime of life, physicians have urgently sought both a cause and a cure for this condition.”

The study examined a group of 769 patients with childhood-onset lupus, 5,317 adult-onset lupus patients and 5,317 healthy controls. Childhood-onset SLE constituted an important subgroup for genetic analysis as the researchers believed these patients may have a higher genetic load, which would facilitate gene discovery. Jacob and his team located the IRAK1 gene on the X chromosome and determined that it has extensive involvement in the regulation of the immune response. Locating IRAK1 on the X chromosome could point to why lupus overwhelmingly affects females. Previous research focused on hormonal differences between males and females as a cause of the gender difference.

The study suggests an important role for IRAK1 at two key checkpoints in lupus development. The first step leads to benign serological and cellular autoactivity, while the second step leads to pathological autoimmunity. “Such information opens up a whole new chapter, not only in our understanding of lupus, but also undoubtedly in the development of new therapies for both the treatment and prevention of the disease,” said Jacob.

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USC researchers have found a tiny variation within a single gene that determine not only how quickly and well lungs grow and function in children and adolescents, but also how susceptible some children will be to exposure to passive tobacco smoke, even in utero. Many factors can affect lung function, growth, and development, including genetic variation and environmental exposures such as tobacco smoke and air pollutants,” said Carrie Breton, lead author of the study and research associate, Keck School Department of Occupational and Environmental Health.

“We wanted to determine whether specific gene variations would have measurable and predictable effects on lung function growth and susceptibility to environmental insults,” she said.

The researchers looked at a class of enzymes known to be involved in antioxidative defense, the glutathione S-transferase (GST) genes and found that variation in several of the GST genes was important. This was a little-known, painful condition called cervical dystonia received national attention on April 3 when Mark F. Lew, professor of clinical neurology, appeared as a guest on NBC’s “The Today Show.” Lew, along with his patient, Rogers Hartmann, was interviewed by co-host Meredith Vieira about the condition. Also known as spasmodic torticollis or torticollis, it causes muscles in the head and neck to twist abnormally. Those who suffer from the condition bend at the neck, to the side, back or front, making everyday actions including walking and taking a drink nearly impossible. A video of Hartmann detailed her struggle to live a normal life.

Neurology symposium to honor Valerie Askanas, W. King Engel

The Keck School of Medicine Department of Neurology and the Office of Continuing Education will host the USC International Neuromuscular Symposium on April 25 in honor of Valerie Askanas and W. King Engel.

Askanas is professor of neurology and pathology at the Keck School of Medicine and the co-director of the USC Neurology-Surgical Center. Engel is professor of neurology and pathology at the Keck School and the director of the USC Neuromuscular Center.

The symposium will provide the newest information available on diagnosis and treatment of neuromuscular diseases. Lectures will cover a broad spectrum of neuromuscular diseases encompassing the entire motor unit, including myopathies, peripheral neuropathies and amyotrophic lateral sclerosis.

The topics on the symposium program will be presented by renowned experts in their respective fields from around the world, all of whom are former trainees of either Askanas or Engel.

In addition, Askanas will present her groundbreaking research on inclusion-body myositis, and Engel will lecture on the treatment of previously “untreatable” neuromuscular diseases.

The daylong event will be at the The Sofitel Hotel, 8555 Beverly Boulevard, Los Angeles. To view the entire program and the faculty list, and to register online, visit http://tinyurl.com/csp6ug.

“We wanted to determine whether specific gene variations would have measurable and predictable effects on lung function growth and susceptibility to environmental insults.”

—Carrie Breton, research associate, Keck School Department of Occupational and Environmental Health.
Calendar of Events
This Calendar of events is also online at www.usc.edu/hsccalendar for the Health Sciences Campus community

Friday, April 17
11 a.m. Hematology Grand Rounds. “Diagnosis and Treatment of Gaucher Disease,” John Barranger, USC. IPT C2103. Info: (323) 965-3950
Noon. “Case Presentations,” Yi Zheng, USC. OPT ASC129. Info: (323) 409-7995

Monday, April 20
Noon. “NEPHSAAP: Transplant,” Yasir Qazi, USC. GHN 4420. Info: (323) 226-7307
Noon. “Case Presentations,” Shahrouz Kermanian, USC. D&T B-3B 105. Info: (323) 409-7995

Tuesday, April 21

Wednesday, April 22
4 p.m. USC Ctr. For Excellence in Research. “Cellular Imaging Methods in Basic Research,” Susan Furberg, USC. UPC. CUB 329. Info: (213) 740-6709

Friday, April 24
Noon. “Case Presentations,” Victor Yu, USC. OPT ASC129. Info: (323) 409-7995

Monday, April 27
Noon. “NEPHSAAP. End-stage Renal Disease and Dialysis (2009),” Hosamchel Madkour, USC. GHN 4420. Info: (323) 226-7307

Tuesday, April 28

Wednesday, April 29
Noon. ZNI Seminar Series. “Emergence of Synaptic Specificity in the Mouse Cerebellum,” Peter Sheffield, Univ. of Basel. ZNI 112. Info: (323) 442-2144

In Case of An Emergency...
Visit the USC Web: http://emergency.usc.edu This page will be activated in case of an emergency. Backup Web servers on the East Coast will function if the USC servers are incapacitated.

NET PROFITS—Alpha Iota Pi, the co-ed fraternity at the USC School of Pharmacy, hosted “Hoops 4 Charity” on April 9. Left, Pharm.D. student Michael Wu sinks a basket during a free-throw competition. Above, Yu takes over as event announcer as Eric Matsushita, also a Pharm.D. student, reacts to missing a shot of her own. Pharm.D. student Dan Trinh won the competition and its top prize—$1,000 for the charity of his choice, the Susan G. Komen for the Cure, which supports breast cancer research.

HSC Earth Day Fair slated for April 23
By Ina Fried
USC’s Health Sciences Campus will celebrate a commitment to responsible, sustainable consumption with activities in Harry and Celesta Pappas Quad on April 23, during Earth Week. During an Earth Day Fair, 11 a.m. to 1 p.m., USC contract vendors will display products for labs and offices and will explain their sustainable practices. Faculty, staff and students are encouraged to become a part of the day’s event. Free “green” bags and other giveaways will be available for those who pledge out loud to follow some sustainable practices. E-waste recycling containers will be placed in the quad for depositing electronic waste throughout the day.

Matthew Oden, manager of USC’s Sustainability Program, said that USC Earth Week 2009 resulted from many “student, staff and faculty groups really stepping up to create events and competitions that allow for engagement with our larger community and a chance to significantly reduce our environmental impact during Earth Week.”

He added that he hoped the event would offer new opportunities for “members of the Trojan Family and the surrounding community to become fully engaged in helping to find the solutions we will need in our journey to sustainability.”

Oden recently joined USC after earning a master’s degree in environmental management from Yale University, working with Al Gore’s The Climate Project and serving as an energy adviser to the United Nations.

For more information about university-wide Earth Week activities, see http://sustainability.usc.

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