

ASN Publications

November 2011 Media Alert: *The Journal of Nutrition*

The following articles are being published in the November 2011 issue of *The Journal of Nutrition*, a publication of the American Society for Nutrition. Summaries of the selected articles appear below; the full text of each article is available by clicking on the links listed. Manuscripts published in *The Journal of Nutrition* are embargoed until the article appears online either as in press (Articles in Press) or as a final version. The embargoes for the following articles have expired.

[Scientists hone in on why diabetes leads to blood vessel damage](#)

[Vitamin D intake in children re-evaluated using new statistical method](#)

[Higher intake of low-fat dairy related to lower incidence of diabetes in postmenopausal women](#)

Scientists hone in on why diabetes leads to blood vessel damage

The US Centers for Disease Control and Prevention estimate that 25.8 million Americans (8.3% of the US population) have diabetes. Overall, the risk for death due to diabetes is about twice that of people of similar age not having diabetes, and the estimated national costs associated with medical costs, disability, work loss, and premature mortality total over \$174 billion. One of the most significant health complications of diabetes is increased risk for heart disease and stroke - both of which are 2-4 times higher among people with diabetes compared to those not having this disease. Diabetes is also the leading cause of new cases of blindness and kidney disease. Scientists have long known that one of the most important reasons why people with diabetes develop these conditions is that high blood sugar (hyperglycemia) damages blood vessels, but how this occurs is not completely understood. One mechanism, however, that has received significant attention is the possibility that hyperglycemia disrupts homeostasis of normal processes regulating blood vessel dilation and constriction - a process largely driven by the release of nitric oxide (NO), a substance produced by the cells making up the inner lining of these vessels. In a study published in the November 2011 issue of *The Journal of Nutrition*, researchers at the University of Connecticut and Changwon National University (South Korea) studied what happens to the NO system when health young men consume a large amount of glucose.

Sixteen healthy, nonsmoking men (mean age: ~21 years) without diabetes were enrolled in this study, which required them to visit a metabolic research center on 2 separate occasions. During each visit, the participants consumed either 75 grams (equivalent to ~15 teaspoons) of glucose or an equal amount of fructose (fruit sugar). Blood samples were then collected repeatedly for 3 hours. Blood vessel dilation, blood glucose and insulin, and a variety of substances related to NO homeostasis were measured. In addition, measures of fat oxidation in the blood and overall inflammation were assessed.

As expected, ingestion of glucose but not fructose caused a substantial decrease in normal blood vessel dilation. Glucose consumption also increased levels of malondialdehyde (which causes oxidative damage to blood vessels) and decreased circulating concentrations of arginine (the biological precursor of NO). The researchers also reported that glucose (but not fructose) consumption led to increased lipid peroxidation, a response that can be damaging to cells making up blood vessels, but not

Journal Links

[The American Journal of Clinical Nutrition](#)

[The Journal of Nutrition](#)

[Advances in Nutrition](#)

Upcoming Events

Oct. 28-Nov. 2. American College of Gastroenterology [Annual Meeting](#). Washington, DC. Visit ASN at Booth #537!

Nov. 9-12. [Annual Biomedical Research Conference for Minority Students](#). St. Louis, MO. Visit ASN in FASEB Row at Booth #316!

View all events [online](#).

Media Requests

To arrange an interview with an [ASN Spokesperson](#), please email media@nutrition.org

[Archive of Press Releases](#)

Author Videos

ASN has partnered with SciVee to showcase author videos describing select articles from our scholarly journals. [Watch the newest offerings](#) online.

About ASN

The American Society for Nutrition (ASN) is the preeminent professional organization for nutrition research scientists and clinicians around the world. ASN is dedicated to bringing together the top nutrition researchers, medical practitioners, policy makers and industry

measures of inflammation. The scientists concluded that their findings suggest that hyperglycemia may reduce vasodilation by both lipid peroxidation and decreased NO availability. Additional controlled clinical trials are clearly needed to determine whether alterations in diet, exercise, or medical interventions can prevent or treat these complications.

Reference Mah E, Noh SK, Ballard KD, Matos ME, Volek JS, Bruno RS. Postprandial hyperglycemia impairs vascular endothelial function in healthy men by inducing lipid peroxidation and increasing asymmetric dimethylarginine: arginine. *Journal of Nutrition* 141:1961-1968, 2011.
For More Information To contact the corresponding author, Dr. Richard Bruno, please send an e-mail to Richard.Bruno@uconn.edu.

Vitamin D intake in children re-evaluated using new statistical method

Vitamin D, the "sunshine vitamin," is needed for strong bones and teeth, and may be involved in immune modulation and cancer prevention. Although vitamin D fortification of foods and beverages has been common for decades, vitamin D deficiency still occurs. As such, the research community has reexamined vitamin D recommendations and is currently monitoring vitamin D intake and status around the globe. However, estimating dietary intake is difficult. This is due, in part, to challenges related to use of dietary recall surveys and food composition databases. In addition, using data concerning sources of vitamin D (dietary vs. supplemental) consumed by *individuals* to describe nutritional adequacy of *populations* is complex. To test a new method by which short-term intakes of vitamin D from foods and dietary supplements can be used to estimate habitual intake from various sources in a population, researchers at the Dutch National Institute for Public Health and the Environment, the U.S. National Cancer Institute, and Wageningen University utilized data collected from a group of young Dutch children. Their study and results can be found in the November 2011 issue of *The Journal of Nutrition*.

The research team analyzed food and dietary supplement intake data collected previously by parents and caretakers of 1279 Dutch children aged 2-6 years. Statistical analysis was carried out by first subdividing the data into those of vitamin D supplement users (~70% of the children 2-3 years and ~40% of the children 4-6 years) and nonusers (~30% of the children 2-3 years and ~60% of the children 4-6 years). Vitamin D intake distribution was then determined based on source for 3 groups: (1) from food for nonusers of supplements, (2) from food for supplement users, and (3) from dietary supplements for those who used them. These three distributions were then mathematically combined in such a way as to estimate the habitual vitamin D intake distribution for the entire population.

Using their methodology, usual total vitamin D intake was estimated to be 3.8 µg/day in 2-3 year olds and 2.3 µg/day in 4-6 year olds, with intakes consistently higher among users of vitamin D-containing dietary supplements. Whereas supplement use did not influence vitamin D intake from foods, older children consumed more food-derived vitamin D than their younger counterparts. Most of the children, regardless of age, had habitual vitamin D intakes below the Institute of Medicine's Estimated Average Requirement (EAR) of 10 µg/day, suggesting that either the EAR values are too high for this population or nutrient adequacy may be of concern. Intake levels were also lower in more than half of the population than those recommended by the Dutch Health Council for young children (adequate intake of 2.5 or 5.0 µg/day, depending on age). Evaluation of this statistical method suggested that it provides relatively precise estimates of habitual total intakes within a population, and the researchers encourage other investigators to consider its use for other nutrients as well.

Reference Verkaik-Kloosterman J, Dodd KW, Dekkers ALM van 't Veer P, Ocké MC. A three-part, mixed-effects model to estimate the habitual total vitamin D intake distribution from food and dietary supplements in Dutch young children. *Journal of Nutrition* 141:2055-2063, 2011.
For More Information To contact the corresponding author, Dr. Janneke Verkaik-Kloosterman, please send an e-mail to Janneke.Verkaik@RIVM.nl.

Higher intake of low-fat dairy related to lower incidence of

leaders to advance our knowledge and application of nutrition. Founded in 1928, ASN publishes *The American Journal of Clinical Nutrition* (AJCN), *The Journal of Nutrition* (JN), and *Advances in Nutrition* and provides a wide range of education and professional development opportunities to advance nutrition research, practice, and education. Visit ASN online at www.nutrition.org.

CFC#36770

Contact ASN

Suzanne Price
 Communications Manager
 9650 Rockville Pike
 Bethesda, MD 20814
media@nutrition.org 301-634-7235

diabetes in postmenopausal women

Diabetes affects almost 26 million people in the United States - over 8% of its population. Another estimated 79 million American adults have prediabetes. As the leading cause of kidney failure, nontraumatic lower-limb amputations, and new cases of blindness among adults, diabetes is a significant health concern around the world and the 7th leading cause of death in the United States. In fact, the risk of death among people with diabetes is double that of people without the disease. There are many factors related to a person's risk of developing diabetes, but one of the most important is poor or imbalanced diet - especially if it leads to obesity or chronic inflammation. Some epidemiologic and intervention studies have provided evidence that consuming a diet high in low-fat dairy products can lower the risk of type 2 diabetes. Thus, researchers continue to be interested in the mechanism for this potentially important physiologic response to dairy intake. In a study reported in the November 2011 issue of *The Journal of Nutrition*, researchers utilized data from the Women's Health Initiative Observational Study to evaluate whether they support a beneficial association between low-fat dairy foods and type 2 diabetes in an ethnically diverse group of women.

A total of 82,076 postmenopausal women without diabetes at enrollment were followed in this prospective, longitudinal 8-year study. After completing a baseline survey, women were asked to fill out a food frequency questionnaire designed to assess their daily intake of over 300 foods and beverages; this questionnaire was repeated 3 years later. Medical histories were obtained annually using mailed questionnaires that specifically asked whether the participants had been newly treated with insulin or oral medication for diabetes during the previous 12 months. The associations between intakes of various dairy products and diabetes incidence were then evaluated statistically.

During the course of the study, 5% of the women were diagnosed with diabetes. Overall, women consumed about 1½ servings of dairy products each day, half of which were low-fat. Compared to women with the lowest consumption of low-fat dairy foods (~0.05 servings/day), women with the highest consumption (~2.8 servings/day) were about half as likely to develop diabetes. This finding did not change when important confounding factors (such as total fat intake) were controlled for. Yogurt appeared to be especially protective in this regard, whereas consumption of whole-fat dairy products was not related to diabetes risk. The relation between low-fat dairy intake and diabetes was most pronounced in obese women. The authors concluded that "a diet high in low-fat dairy products is associated with lower diabetes risk in postmenopausal women, particularly those who are obese."

Reference Margolis KL, Wei F, de Boer IH, Howard BV, Liu S, Manson JE, Mossavar-Rahmani Y, Phillips LS, Shikany JM, Tinker LF, for the Women's Health Initiative Investigators. A diet high in low-fat dairy products lowers diabetes risk in postmenopausal women. *Journal of Nutrition* 141:1969-1974, 2011.

For More Information To contact the corresponding author, Dr. Karen Margolis, please send an e-mail to Karen.L.Margolis@HealthPartners.com.