

ASN Publications

December 2011 Media Alert: *The Journal of Nutrition*

The following articles are being published in the December 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.

[**Controlled human study: increased rye intake may lower prostate cancer risk**](#)

[**Researchers use piglets to study the effects of prebiotic-fortified infant formula**](#)

[**Scientists find interaction between red meat consumption and saturated fat intake on cardiovascular disease risk factors**](#)

[**Controlled human study: increased rye intake may lower prostate cancer risk**](#)

Each year, nearly a quarter of a million U.S. men are diagnosed with prostate cancer, a disease that ranks second as cause of cancer-related death among industrialized countries. As the prevalence of prostate cancer is expected to rise even more with increasing longevity worldwide, finding ways to prevent this disease and slow its progression is more important than ever. Several dietary components have been associated with lower prostate cancer risk in human studies, including whole-grain cereal products, especially those made from rye. Animal and cell culture studies also support a protective effect. However, the precise mechanism by which rye may influence prostate cancer remains unknown. To help answer this important question, a collaboration of Swedish researchers studied what happens to myriad blood values when men with early-stage prostate cancer consume rye-rich diets. Details about this research and its results are published in the December 2011 issue of *The Journal of Nutrition*.

This study was carried out as a randomized, controlled experiment in which 17 men consumed both the control (refined wheat products) and experimental (whole-grain rye and rye bran products) treatments for 6 weeks each. All men had "low-risk" prostate cancer and had chosen not to undergo surgical, radiation, or chemotherapy treatments. During each study period, the participants were asked to replace all cereal grain products that they normally eat with experimental alternatives designed to provide about half of each person's caloric needs, the other half coming from normally-eaten foods. Fasting blood samples were collected at the end of each intervention periods and analyzed using nuclear magnetic resonance, a state-of-the-art technology that allows simultaneous measurement of hundreds of compounds (metabolites) in the blood. These metabolites are collectively referred to as the "metabolome." Adiponectin and leptin (obesity hormones), glucagon (a regulator of blood glucose), and homocysteine (an intermediate

Journal Links

[The American Journal of Clinical Nutrition](#)

[The Journal of Nutrition](#)

[Advances in Nutrition](#)

Upcoming Events

February 15-17, 2012. [ASN Middle East Congress](#). Istanbul, Turkey.

View all upcoming events [online](#).

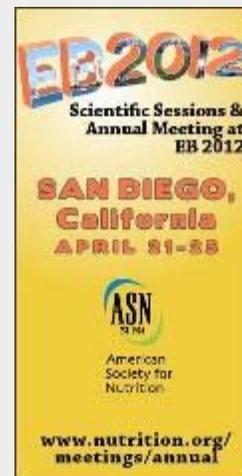
Media Requests

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.



in carbon transfer reactions and a risk factor for prostate cancer progression) were also assessed.

Compared to the control period, consumption of rye products significantly increased the concentrations of 5 metabolites: 3-hydroxybutyrate and acetone (ketones), betaine (a carbon donor), N,N-dimethylglycine, and dimethyl sulfone. Rye consumption also tended to decrease leptin, significantly lowered homocysteine, and caused a small (2%) but significant weight loss in some of the subjects. Together, these results suggest that eating whole-grain rye products causes a shift in energy balance from anabolic to catabolic states coupled with more favorable homocysteine metabolism. The researchers concluded that these coordinated shifts might help explain the previously described beneficial relation between rye intake and prostate cancer and urge further studies in this regard.

Reference Moazzami AA, Zhang J-X, Kamal-Eldin A, Åman P, Hallmans G, Johansson J-E, Andersson S-O. Nuclear magnetic resonance-based metabolomics enables detection of the effects of a whole grain rye and rye bran diet on the metabolic profile of plasma in prostate cancer patients. *Journal of Nutrition* 141:2139-2145, 2011.

For More Information To contact the corresponding author, Dr. Ali Moazzami, please send an e-mail to Ali.Moazzami@lmv.slu.se.

Researchers use piglets to study the effects of prebiotic-fortified infant formula

Experts unanimously agree that the healthiest way to feed most infants is exclusive breastfeeding. However, some women cannot successfully breastfeed, others prefer not to do so, and some infants are too ill to be fed exclusively by their mothers. Consequently, the development of infant formulas that closely mimic human milk composition is critical for many babies. This is challenging, however, because breastmilk is complex and the functions of many of its components are not well understood. A great example of this is the abundance of large, indigestible carbohydrates ("oligosaccharides") which do not supply calories to the baby but may be important for optimal immune development and intestinal function. For instance, oligosaccharides are thought to promote the growth of healthy intestinal bacteria, which in turn decrease growth of their pathogenic counterparts. However, human milk oligosaccharides are complex and difficult to replicate for use in infant formulas, so alternatives are being sought. One possible milk oligosaccharide substitute is polydextrose, a fiber-like glucose polymer sometimes added to foods to increase their bulk. Recently, scientists at North Carolina State University and Mead Johnson Nutrition collaborated to study the effects of polydextrose fortification of infant formula on the intestinal bacteria and immune function of piglets - a common animal model for human infants. Their results are published in the December 2011 issue of *The Journal of Nutrition*.

Upon delivery, healthy newborn piglets were allowed to be fed by their mothers (sow-reared controls) or were removed from their mothers and fed a modified human infant formula containing varying levels of polydextrose (0, 1.7, 4.3, 8.5, or 17 g/L). Each group constituted 13 piglets. After 18 days, piglets were euthanized and their intestines evaluated both visually and biochemically. Presence of selected intestinal bacteria was documented, as was evidence of immune modulation within intestinal tissue.

Increasing intake of polydextrose resulted in parallel increases in lactobacilli, a type of bacteria commonly found in the stools of breastfed but not formula-fed infants. The researchers also reported a positive correlation between polydextrose consumption and lactobacillus-derived acids (e.g., lactic acid) in the intestine. Several immune compounds typically associated with inflammation were also responsive to polydextrose treatment. These included tumor necrosis factor-alpha (TNF- α), interleukin-1-beta (IL-1 β), and interleukin-8 (IL-8), which were lowest at intermediate polydextrose intakes. The researchers concluded that polydextrose fortification of infant formula

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 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

may mimic some of the functional properties of human milk oligosaccharides, and that these effects are likely due in part to modulation of intestinal bacteria and the substances they produce. Of course, human intervention trials will be needed to know whether human infants respond in a similar manner.

Reference Herfel TM, Jacobi SK, Lin X, Fellner V, Walker DC, Jouni ZE, Odle J. Polydextrose enrichment of infant formula demonstrates prebiotic characteristics by altering intestinal microbiota, organic acid concentrations, and cytokine expression in suckling piglets. *Journal of Nutrition* 141:2139-2145, 2011.

For More Information To contact the corresponding author, Dr. Jack Odle, please send an e-mail to jack_odle@ncsu.edu.

Scientists find interaction between red meat consumption and saturated fat intake on cardiovascular disease risk factors

Abnormal blood lipid profile ("dyslipidemia") is a common risk factor for the development of cardiovascular disease, the leading cause of death among adults in the United States. Many studies have shown that consumption of a diet relatively low in carbohydrates and high in protein can normalize blood lipids and lower one's cardiovascular disease risk. However, there is widespread concern that diets high in protein can also contribute excessive saturated fat - a dietary constituent considered by many to be atherogenic. Indeed, epidemiologic evidence points to a positive association between red meat intake (which is often high in saturated fat) and cardiovascular disease risk, whereas the same is not found for white meat and low-fat dairy products. Findings are not consistent, however, and health experts do not know to what extent protein food source (e.g., red vs. white meat) influences the relation between macronutrient composition of the diet and dyslipidemia. To help answer this question, researchers at Children's Hospital Oakland Research Institute and Touro University California conducted a randomized, controlled dietary intervention study. You can read about their results in the December 2011 issue of *The Journal of Nutrition*.

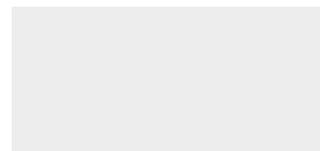
Forty healthy men first consumed, for 3 weeks, a baseline diet containing no beef products and providing 50, 13, and 38% of energy from carbohydrates, protein, and fat, respectively. This diet was relatively high in saturated fat (15% of energy). As a point of reference, the Institute of Medicine recommends that we obtain 45-65, 10-35, and 20-35% of energy from carbohydrates, protein, and fat, respectively. After the baseline period, the subjects consumed (in random order) two low-carbohydrate diets that were high in beef but different in terms of their saturated fat content (15 vs. 8% of energy from saturated fat). Both of these experimental low-carbohydrate diets contributed 31, 31, and 38% of their energy in the form of carbohydrates, protein, and fat, respectively. Each low-carbohydrate diet was consumed for 3 weeks, and blood samples were taken on the last two days of the baseline period and each experimental period.

Plasma triglyceride concentrations were significantly reduced following both low-carbohydrate diets compared to the baseline diet period, regardless of the diet's saturated fat content. However, blood cholesterol, total low-density lipoprotein (LDL), and LDL-cholesterol (LDL-C) were lowest when the subjects consumed the low-carbohydrate, low-saturated fat diet compared to when they consumed the other two diets that were high in saturated fat. The authors concluded that cardiovascular disease risk may be lessened by consumption of a low-carbohydrate, high-protein (beef) diet, but only in the context of low saturated fat intake. These results represent yet another facet of the inherently complex relationship between diet and optimal health.

Reference Mangravite LM, Chiu S, Wojnoonski K, Rawlings RS, Bergeron N, Krauss RM. Changes in atherogenic dyslipidemia induced by carbohydrate restriction in men are dependent on dietary protein source. *Journal of Nutrition* 141:2139-2145, 2011.

For More Information To contact the corresponding author, Dr. Ronald

Krauss, please send an e-mail to rkrauss@chori.org.



[Forward to a Colleague](#)



Try it FREE today.

This email was sent to sprice@nutrition.org by sprice@nutrition.org | [Update Profile/Email Address](#) | Instant removal with [SafeUnsubscribe™](#) | [Privacy Policy](#).

American Society for Nutrition | 9650 Rockville Pike | Bethesda | MD | 20814