July 2014 Media Alert: *The Journal of Nutrition*

The following articles are being published in the July 2014 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.

Prepregnancy consumption of high-fat junk food and fast food related to preterm births

New study finds benefit of coenzyme Q10 supplementation in heart disease

Chinese researchers report positive effects of luteolin consumption on prevention of alcohol-induced liver damage

Prepregnancy consumption of high-fat junk food and fast food related to preterm births

Eating a well-balanced diet during pregnancy is important for the health of both mothers and infants. For instance, suboptimal maternal nutritional status during pregnancy can lead to both low birth weight and high birth weight - both of which can put a newborn at risk for illness, neonatal mortality, health-related problems in adulthood. But what about before conception? In other words, can a woman's prepregnancy diet influence infant health in terms of important variable such as risk of preterm delivery and birth weight? Somewhat surprisingly, very little research has been conducted on this topic. To help fill this research gap, Dr. Jessica Grieger from the Lyell McEwin Hospital (Robinson Research Institute, Australia) evaluated whether certain dietary patterns eaten prior to pregnancy could be linked to any negative pregnancy outcomes, such as preterm birth or small birth weight. Their study is published in the July 2014 issue of *The Journal of Nutrition*.

To test their hypothesis that preconception diet quality influences perinatal outcome, Grieger and colleagues statistically analyzed data collected from 309 women who reflected on their food intake 1 year prior to becoming pregnant and were then followed until their babies were delivered. Detailed information was collected concerning maternal dietary patterns, length of pregnancy, birth weight, birth length, and the infant's head circumference. Dietary patterns were found to naturally group into one of three classifications: (1) high in fish, meat, chicken, whole grains, and fruit (high-protein/fruit pattern), (2) high in fat, added sugar, and fast food (high-fat/sugar pattern), or (3) high in whole grains and legumes ("vegetarian-like" pattern).

Whereas women who consumed diets most closely matching the high-protein/fruit pattern were the least likely to deliver their babies prematurely, those consuming foods matching the "high-fat/sugar" pattern were the most likely to do so. The latter pattern was also related to short infant birth lengths. The authors of the study concluded that, although further research is

Upcoming Events

Dec. 4-6. Advances & Controversies in Clinical Nutrition. Washington, DC.

Journal Links

The American Journal of Clinical Nutrition

The Journal of Nutrition

Advances in Nutrition

Nutrition Today is a partner publication of ASN. Read more about the journal online. ASN members receive exclusive subscription rates.

Follow ASN on Twitter for scientific studies, nutrition news, and special offers.

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.

Advertise with ASN

Advertising opportunities with ASN include the ASN monthly e-newsletter, medical nutrition e-newsletter, on-site convention newspaper, and job board. Visit our advertising page to learn

needed, their data suggest that poor dietary habits even before conception might be important and that this period of life might represent a previously untapped window of opportunity to target healthy diet changes for healthier babies.

Reference Grieger JA, Grzeskowiak LE, Clifton VL. Preconception dietary patterns in human pregnancies are associated with preterm delivery. *Journal of Nutrition* 144:1075-1080, 2014.
For More Information To contact the corresponding author, Dr. Vicki Clifton, please send an e-mail to Vicki.clifton@adelaide.edu.au.

New study finds benefit of coenzyme Q10 supplementation in heart disease

Cardiovascular disease is the leading cause of death in the United States and, although major advances have been made in terms of its prevention and treatment, there is still much to learn. One area of research which has received substantial attention in the past few decades is the relation between "good cholesterol-containing" high-density lipoproteins (HDL) and cardiovascular morbidity and mortality. Indeed, hundreds of studies have shown an inverse relationship between blood levels of HDL and heart disease; in other words, people with high HDL levels tend to have the lowest cardiovascular risk. In addition, high levels of apo-lipoprotein A1 (apoA1, a protein found in HDL particles) are associated with even further reduced risk for heart disease. Although scientists have generally thought that these relationships were due to the fact that HDL and apoA1 function together to transport excess cholesterol from tissues back to the liver, more recent research suggests that apoA1 itself may also have anti-inflammatory properties protecting the heart from damage induced by blockage of blood flow. To help understand this potentially important possibility, a research team led by Dr. Marc Penn (Northeast Ohio Medical University and Summa Cardiovascular Institute) studied what happens when genetically-modified laboratory mice experience heart attack-like episodes. Details concerning this study and its findings are published in the July 2014 issue of *The Journal of Nutrition*.

Penn and colleagues studied three genetically-different mice: "wild-type" mice with typical levels of apoA1-containing HDL, "heterozygous" mice with about half the normal levels, and "knock-out" mice completely deficient in apoA1. Mice were subjected to an experimental procedure during which one of the arteries carrying blood to the heart was temporarily blocked and then reopened. Damage to the heart and production of reactive oxygen compounds (which cause oxidation, inflammation, and tissue damage) were then evaluated.

Compared to the wild-type mice, those with lower or no apoA1 sustained 52 and 125% more cardiac damage, respectively. This effect was found to be due, at least in part, to lower levels of coenzyme Q10 - a vitamin-like substance found throughout the body and also in meats and seafood, in the heart. CoQ10 supplementation is controversial in the clinical literature. The author concluded "these data suggest a previously unappreciated mechanism for myocardial stunning, cardiac dysfunction, and muscle pain associated with low HDL and low apoA1 concentrations that can be corrected by CoQ10 supplementation and suggest specific populations of patients that may benefit from having CoQ10 levels tested and subsequent supplementation where necessary."

Reference Dadabayev AR, Yin G, Latchoumycandane C, McIntyre TM, Lesnefsky EJ, Penn MS. Apolipoprotein A1 regulates coenzyme Q10 absorption and mitochondrial function and infarct size in a mouse model of myocardial infarction. *Journal of Nutrition* 144:1030-1036, 2014.
For More Information To contact the corresponding author, Dr. Marc Penn, please send an e-mail to mpenn2@neomed.edu.

Chinese researchers report positive effects of luteolin

about all available opportunities to reach our membership.

Contact ASN

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

consumption on prevention of alcohol-induced liver damage

The US Centers for Disease Control and Prevention (CDC) estimate that over half of American adults consume alcohol, with anywhere from 19-40% and 5-13% (depending on age) classified as binge drinkers or heavy alcohol users, respectively. Excessive alcohol consumption can lead to multiple negative health outcomes including liver damage and liver cancer, both of which are associated with inflammation of the liver as well as an accumulation of lipids. As alcoholic liver disease itself results in nearly 16,000 deaths annually, finding ways to prevent these complications (short of abstaining from alcohol) is clinically important. Previous research suggests that luteolin, a dietary antioxidant found in a variety of fruits, vegetables, and herbs (such as carrots, peppers, celery, olive oil, peppermint, thyme, rosemary, and oregano), may help alleviate inflammation and accumulation of lipids in the body. In a study published in the July 2014 issue of *The Journal of Nutrition*, researchers from the Shanghai University of Traditional Chinese Medicine report their new findings that luteolin may also alleviate alcoholic liver disease induced by chronic and binge drinking - well, at least in mice.

This study was conducted in two phases: the first with live laboratory mice (an *in vivo* study) and the second using cultured cells (an *in vitro* study). For the animal study, mice were randomly assigned to three groups: a control group fed a normal diet with no alcohol, an alcohol-consuming group fed a normal diet and subjected to chronic and binge-drinking protocols, and an alcohol+luteolin group fed a luteolin-fortified diet and subjected to both alcohol consumption protocols. For the *in vitro* portion, the effect of luteolin on expression of lipid- and inflammation-related genes in mouse liver cells was studied.

Compared to the control animals, mice consuming alcohol had elevated levels of several substances related to liver damage. For example, circulating LDL cholesterol (the "bad" form) was higher with alcohol consumption. Accumulation of lipids in the liver was also higher when alcohol was administered. Consumption of luteolin, however, prevented many of these negative outcomes. Addition of luteolin to cells grown in culture media also prevented alcohol-induced lipid accumulation and increased expression of many genes that would normally result in lipid buildup. The scientists concluded that consumption of luteolin may be an effective means to reduce the negative effects of alcohol consumption on liver damage. Clearly, well-controlled large-scale, clinical intervention studies will need to be conducted prior to extending these findings to humans.

Reference Liu G, Zhang Y, Liu C, Xu D, Zhang R, Cheng Y, Pan Y, Huang C, Chen Y. Luteolin alleviates alcoholic liver disease induced by chronic and binge ethanol feeding in mice. *Journal of Nutrition* 144:1009-1015, 2014.

For More Information To contact the corresponding author, Dr. Yan Chen, please send an e-mail to ychen.3@sibs.ac.cn.