January 2015 Media Alert: 
*The Journal of Nutrition*

The following articles are being published in the January 2015 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.

**Dietary protein - how much do women need?**

Dietary protein is an essential nutrient, needed by the body to build muscle and support immune function, energy metabolism, acid-base balance, and regulation of homeostasis. Protein requirements can be impacted by a variety of factors including age, sex, body weight and composition, activity levels, and trauma. Current recommendations concerning how much protein is needed in each life stage have been published by the Institute of Medicine. These include the estimated average requirements (EAR; reflecting the amount thought to meet the needs of 50% of the population) and the recommended dietary allowances (RDA; the amount thought to meet the needs of 97% of the population). However, because establishing EAR and RDA values for special groups such as pregnant women and the elderly is difficult, current values reflect estimates based on healthy young adults. Questioning whether these values are accurate, two related research group comprised of scientists from several Canadian universities and research hospitals used newly-developed methods to more directly assess protein requirements in women during pregnancy and later life. Their results are presented in 2 manuscripts in the January 2015 issue of *The Journal of Nutrition*, along with an accompanying editorial by Dr. Juan Marini of Baylor College of Medicine.

Both studies used the “indicator amino acid oxidation” method, which relies on consumption of very small amounts of a stable isotope of the amino acid phenylalanine (a building block of protein) to track protein utilization at various levels of protein intake by measuring it non-invasively in urine and expired breath. In one of the studies (led by Dr. Rajavel Elango at the British Columbia Children’s Hospital and the University of British Columbia), 29 healthy women were studied in early and late pregnancy. In the other (led by Dr. Glenda Courtney-Martin at the Hospital for Sick Children in Toronto), 12 healthy women > 65 years of age were studied.

In both of the studies, the researchers concluded that the current EAR and RDA values for protein are likely too low. For instance, whereas the RDA during pregnancy is 1.10 grams of protein for each kilogram of body weight, Elango and coworkers concluded that the RDA is actually 1.66 and 1.77 grams during early and late pregnancy, respectively. For a woman weighing 150 lb (68 kg), this difference would amount to an additional 40 grams of protein daily (the amount in one serving of beef plus one cup of milk). Similarly, Courtney-Martin and her team propose that the current RDA for older women (0.80 g/kg/day) should be 60% higher (1.29 g/kg/day). Marini agrees that these new findings warrant serious reconsideration of current
protein recommendations and urges researchers to both evaluate new recommendations and carefully appraise the accuracy of all methods used to assess protein requirements in humans.

**Reference** Stephens TV, Payne M, Ball RO, Pencharz PB, Elango R. *Protein requirements of healthy pregnant women during early and late gestation are higher than current recommendations.* *Journal of Nutrition* 145: 73-8, 2015.


Marini JC. *Protein requirements: are we ready for new recommendations?* *Journal of Nutrition* 145: 5-6, 2015.

**For More Information** To contact the corresponding author, Dr. Rajavel Elango, please send an e-mail to relango@cfr.ubc.ca. To contact the corresponding author, Dr. Glenda Courtney-Martin, please send an e-mail to Glenda.courtney-martin@sickkids.ca. To contact the corresponding author, Dr. Juan Marini, please send an e-mail to marini@bcm.edu.

**Low vitamin B-6 status in women using oral contraceptives related to altered levels of important circulating metabolites**

Many vitamins function by acting as ‘coenzymes.’ In other words, they are needed to make enzymes work, allowing the body to both create necessary molecules and disassemble and detoxify unneeded compounds. And although the functions of many vitamins overlap, each has its own set of enzymes that it assists. For instance, vitamin B-6 is involved in metabolic processes needed for DNA synthesis, methylation reactions (adding carbons), and the interconversion and breakdown of amino acids (the building blocks of proteins). Recently, vitamin B-6 has received significant consideration because low levels are sometimes associated with increased risk for cardiovascular disease. In addition, vitamin B-6 status may be lower in women who use oral contraceptives than those who do not, and some experts question whether this might help explain why oral contraceptive users have a higher risk for cardiovascular disease than non-users. To help shed important light on these potential relationships, a research team led by Dr. Jesse Gregory and colleagues at the University of Florida explored associations between vitamin B-6 status and biomarkers of health in women using oral contraceptives and the potential effects of oral contraceptives. Details about this study can be found in the January 2015 issue of *The Journal of Nutrition*.

This study was undertaken in two phases. In the first, the statistical relationships among circulating vitamin B-6 levels and markers of carbon and sulfur transfer, amino acid metabolism, and chronic inflammation in 157 healthy oral contraceptive users was evaluated. In the second phase, data from 111 of these women were compared to those obtained from 11 non-users of oral contraceptives. All women were between 20 and 40 years of age.

The results suggested that low B-6 status alters certain phases of metabolism. There were also several differences between women who did and did not use oral contraceptives which suggested that oral contraceptives may affect metabolism independently of vitamin B-6 status. However, there were no apparent relationships between vitamin B-6 status or oral contraceptive use and chronic inflammation. Another important finding was that the group of women who participated in the study actually had much less vitamin B-6 insufficiency than had been reported in previous studies. The scientists concluded that their data provide additional evidence that low vitamin B-6 status in women using oral contraceptives is associated with alterations in circulating levels of metabolic indicators. However, whether these associations help explain the increased risk of cardiovascular disease among oral contraception users will require further research.

**Reference** Rios-Avila L, Coats B, Chi Y-Y, Midttun Ø, Ueland PM, Stacpoole PW, Gregory JF III. *Metabolite profile analysis reveals association*
of vitamin B-6 with metabolites related to one-carbon metabolism and tryptophan catabolism but not with biomarkers of inflammation in oral contraceptive users and reveals the effects of oral contraceptives on these processes. *Journal of Nutrition* 145: 87-95, 2015.

**For More Information** To contact the corresponding author, Dr. Jesse Gregory, please send an e-mail to jfgv@ufl.edu

*ASN is the authoritative voice on nutrition and publisher of* The American Journal of Clinical Nutrition, The Journal of Nutrition, and Advances in Nutrition. *Established in 1928, ASN's more than 5,000 members in more than 75 countries work in academia, practice, government and industry. ASN advances excellence in nutrition research and practice through its publications, education, public affairs and membership programs. Visit us at* [www.nutrition.org](http://www.nutrition.org).