

ASN Publications

August 2012 Media Alert: *The Journal of Nutrition*

The following articles are being published in the August 2012 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.

[Consuming more salmon while pregnant increases omega-3 fatty acids in milk during breastfeeding](#)

[Controlled trial finds no benefit of whey protein on body composition](#)

[Researchers discover rare genetic variation associated with better folate status](#)

Consuming more salmon while pregnant increases omega-3 fatty acids in milk during breastfeeding

The 2010 Dietary Guidelines for Americans urges pregnant women to consume 8 to 12 ounces (~2 to 3 servings) of seafood each week, while limiting white tuna to 6 ounces and avoiding tilefish, shark, swordfish, and king mackerel. This recommendation balances the need to consume sufficient amounts of omega-3 fatty acid-rich foods while limiting consumption of those that might contain high levels of mercury. Long-chain omega-3 fatty acids, found in high concentrations in oily fish such as salmon, are especially important during early development when they are needed for optimal growth and development (especially of the visual and central nervous systems) and may be important as well for vascular, cardiac, and immune systems. However, very little is known about the influence of oily fish consumption during pregnancy on immune substances and omega-3 fatty acid content of milk produced during the subsequent lactation - a period of continued infant growth and development. To shed important light on this topic, a European consortium of researchers, led by the Universities of Southampton and Reading in the United Kingdom, collaboratively conducted a dietary intervention study in which pregnant women were randomly assigned to consume their normal diet or one high in salmon. Details about this study can be found in the August 2012 issue of *The Journal of Nutrition*.

This investigation was a component of the "Salmon in Pregnancy Study," part of the EU Project "Sustainable Aquafeeds to Maximize the Health Benefits of Farmed Fish for Consumers" (AQUAMAX), and designed to assess the health effects of oily fish consumption in pregnant women whose children were at high risk for developing common inflammatory diseases such as asthma and allergies. Participants were instructed either to continue with their typical dietary patterns or incorporate 2 servings weekly of farm-raised salmon high in long-chain omega-3 fatty acids from 20 weeks of pregnancy until delivery. Milk samples were collected several times during the first month postpartum and analyzed for fatty acids and a selected group of immune markers.

Upcoming Events

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Bethesda, MD.

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Journal Links

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Salmon consumption during pregnancy increased the proportion of long-chain omega-3 fatty acids in milk throughout the first month postpartum. Fish consumption also lowered levels of secretory immunoglobulin-A (sIgA) in milk. Although the researchers are unable to predict the biological significance of lower sIgA for the infant, they recommend further research to better understand the impact of oily fish consumption on breast milk composition.

Reference Urwin HJ, Miles EA, Noakes PS, Kremmyda L-S, Vlachava M, Diaper ND, Pérez-Cano J, Godfrey KM, Calder PC, Yaqoob P. Salmon consumption during pregnancy alters fatty acid composition and Secretory IgA concentration in human breast milk *Journal of Nutrition* 142:1603-1610, 2012.

For More Information To contact the corresponding author Dr. Parveen Yaqoob, please send an e-mail to p.yaqoob@reading.ac.uk.

Controlled trial finds no benefit of whey protein on body composition

Protein, a major component of muscle and many other body tissues, is an essential component of the diet. Nonetheless, scientists continue to grapple with how much we need and what type is best. Whereas some experts contend that focusing more on plant protein sources might benefit health, others tout advantages associated with increasing certain types of animal-derived protein - such as that found in the whey component of dairy products. Indeed, research supporting the latter argument has led many athletes to reach for chocolate milk immediately following a workout or game. However, the results of research on this topic are inconsistent, and many questions concerning the potential effects of whey protein on health remain. In a study published in the August 2012 issue of *The Journal of Nutrition*, researchers from Purdue University provide evidence that increased consumption of whey protein may not provide benefit to overweight and obese adults engaged in a combined resistance and cardiovascular exercise program.

The research team, led by Dr. Wayne Campbell at Purdue University, tested the hypotheses that increased intake of whey protein coupled with exercise would (1) increase lean mass and decrease fat mass and (2) decrease waist circumference, blood lipids, blood pressure, and insulin resistance in relatively healthy, previously sedentary overweight or obese adults. A total of 220 subjects (mean age: ~49 years) were assigned randomly to consume 0, 20, 40, or 60 grams/day whey protein in the form of a powdered supplement for 36 weeks. As a point of reference, one serving (1 cup) of skim milk contains 1.7 grams of whey protein. All subjects were also instructed to participate in resistance exercise twice weekly and aerobic exercise once weekly. Anthropometric measurements (e.g., waist circumference, body composition), blood lipids and inflammatory markers, blood pressure, and glucose tolerance (insulin resistance) were assessed at the beginning, mid-point, and end of the study.

Despite positive effects of the exercise regimen on overall health, this study found no effect of increased whey protein consumption on any health parameter investigated. However, the researchers caution that these findings may not extend to younger individuals or people who are losing weight. In addition, the subjects in this study did not coordinate when they exercised

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with the time they consumed their whey protein supplement, and this factor may be important. This is because, in general, studies show that the effects of whey protein consumption on muscle growth may be greatest when it is consumed immediately after exercise.

Reference Weinheimer EM, Conley TB, Kobza VM, Sands LP, Lim E, Janle EM, Campbell WW. Whey protein supplementation does not affect exercise training-induced changes in body composition and indices of metabolic syndrome in middle-aged overweight and obese adults. *Journal of Nutrition* 142:1532-1539, 2012.

For More Information To contact the corresponding author, Dr. Wayne Campbell, please send an e-mail to campbellw@purdue.edu.

Researchers discover rare genetic variation associated with better folate status

The term "folate" is used to describe several variations of naturally-occurring and synthetic forms of an essential B vitamin known for decades to be important for growth and development. More recent discoveries have also shown that optimal folate status is related to better pregnancy outcome and possibly lower risk for several complex chronic diseases such as cardiovascular disease and cancer. As a result, many countries (including the United States and Canada) have instituted national folate fortification programs. Whereas increased dietary intake of folate, largely as a result of nationwide fortification, has lowered incidence of folate deficiency at the population level, it is clear that not all individuals respond in the same way. This is, in part, due to genetic differences influencing folate absorption and utilization. Understanding this genetic diversity is important because it may lead to more effective dietary interventions in especially at-risk populations. In a study published in the August 2012 issue of *The Journal of Nutrition*, researchers from the Czech Republic describe a newly discovered, rare genetic variant that appears to predispose people to better folate status.

The researchers conducted their study in two phases. In the first, they identified 12 potentially influential variations in 6 folate-related genes from 29 individuals. Three of these genetic variants were relatively common and well studied, whereas the others were rare and not previously described. In the second phase, blood samples from 511 adults were analyzed to determine whether each individual possessed 0, 1, or 2 copies of the preselected genetic variants of interest. The presence or absence of these variants was then correlated with circulating (plasma and red blood cell) folate concentrations.

Results indicate that 2 of the genetic variations identified are related to circulating folate concentrations. For one of these, presence of a common variant of a gene coding for an enzyme involved in folate function was associated with lower plasma folate. For the other, occurrence of a rare variant was associated with higher levels of red blood cell folate. Interestingly, although the rare variant was present in only 2% of the population, its overall effect was as powerful in affecting circulating folate as that of its more common genetic cousin. The authors concluded that their data support the possibility that prevalence of certain rare genetic variations may be as important as more common yet less influential genetic variations in determining folate status in a population. They urge additional studies designed to test this possibility further.

Reference Pavlikova M, Sokolova J, Janosikova B, Melenovska P, Krupkova L, Zvarova J, Kozich V. Rare allelic variants determine folate status in an unsupplemented European population. *Journal of Nutrition* 142:1403-1409, 2012.

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