

# ASN Publications

## The Journal of Nutrition Media Alerts

The following articles have been published in the December 2018 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 (**Editor's Choice Articles in bold**):

- Dietary fiber may help to reduce risk of painful osteoarthritis in the knee
- Improved vitamin A status during pregnancy found to boost immunologic protection
- Dementia prevention: moving beyond a single-nutrient approach
- **Purine metabolite concentrations are altered by diets that limit exposure to milk-derived exosomes and their RNA cargos**
- **Stable isotope ratios are able to serve as biomarkers of certain types of foods**

### Dietary fiber may help to reduce risk of painful osteoarthritis in the knee

Dietary fiber has long been recognized as an important component of healthy diets. In addition to lowering the risk of many chronic, degenerative diseases, a diet high in fiber is useful in the treatment of obesity. Along with putting extra pressure on body joints, obesity is also known to promote chronic inflammation in various tissues. For these reasons, obesity has been implicated as a contributing factor to symptomatic knee osteoarthritis. A study conducted by [Dai and colleagues](#) published in the December issue of *The Journal of Nutrition* investigated the extent to which BMI and inflammation influenced the relation between dietary fiber and symptomatic knee osteoarthritis. Using longitudinal data from the Osteoarthritis Initiative (OAI) and the Framingham Offspring Osteoarthritis Study, men and women with or at risk of knee osteoarthritis were followed for 48 months in the OAI and for 9.5 years in the Framingham Study. Dietary fiber intake was estimated using a validated food-frequency questionnaire. Measured weight and height were used to calculate BMI. Incident symptomatic knee osteoarthritis occurred in 861 knees among 2876 persons in the OAI and in 143 knees among 971 persons in the Framingham study. In both populations, participants who consumed >21 g of dietary fiber per day had lower mean BMIs compared with those with intakes <21 g of dietary fiber per day. Study results suggest that BMI appears to be involved in the causal pathway for the association between dietary fiber and risk of symptomatic knee osteoarthritis incident. However, alternate pathways such as the role of microbiome should also be considered in future studies.

**References:** Dai Z, Jafarzadeh SR, Niu J, Felson TF, Jacques PF, Li S, Zhang Y. [Body mass index mediates the association between dietary fiber and symptomatic knee osteoarthritis in the Osteoarthritis Initiative and the Framingham Osteoarthritis Study](#). *J Nutr* 2018 148(12):1961-7.

**For More Information:** To contact the corresponding author, Zhaoli Dai, please send an email to [zhaoli.dai-keller@sydney.edu.au](mailto:zhaoli.dai-keller@sydney.edu.au).

### Improved vitamin A status during pregnancy found to boost immunologic protection

Because vitamin A plays an important role in immune response, passive

## Important Dates

**Dec 10-13.** [Int'l Symposium on Understanding the Double Burden of Malnutrition for Effective Interventions](#) (Vienna, Austria)

**Jan 12, 2019.** [CNS Thematic Conference - Healthy Diets and Weight: Sorting Fact from Fiction](#) (Toronto, ON, Canada)

**Mar 7, 2019.** [6th International Conference on Nutrition and Growth](#) (Valencia, Spain)

## Journal Links

[The American Journal of Clinical Nutrition](#)

[The Journal of Nutrition](#)

[Advances in Nutrition](#)

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[Nutrition Today](#) partner publication of ASN.

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immunologic protection may be compromised in populations with high prevalence of vitamin A deficiency. In the December issue of *The Journal of Nutrition*, [Ahmad and colleagues](#) investigated maternal vitamin A supplementation at the recommended level of intake during pregnancy and infant immune response to influenza vaccine. In this randomized controlled clinical trial, pregnant Bangladeshi women in the second of trimester of pregnancy received either weekly oral doses of vitamin A or placebo until 6 months postpartum. During the third trimester, mothers received a single dose of inactivated influenza vaccine. Influenza vaccine responses were measured in mothers' blood, and passive antibody transfer was measured in the fetus (cord blood) and infants' blood. Study results suggest that vitamin A plays an important role in the transport of maternal antibodies to the fetus at the time of vaccination. Low-dose weekly vitamin A supplements during pregnancy and for 6 months postpartum significantly increased vaccine antibody production in response to influenza vaccines given during the third trimester of pregnancy. However, the benefits of maternal vitamin A supplementation in transplacental antibody transfer may depend on the time of gestation when mothers are vaccinated.

**Reference:** Ahmad SM, Alam Md J, Khanam A, Rashid M, Islam S, Kabir Y, Raqib R, Steinhoff MC. [Vitamin A supplementation during pregnancy enhances pandemic H1N1 vaccine response in mothers, but enhancement of transplacental antibody transfer may depend on when mothers are vaccinated during pregnancy.](#) *J Nutr* 2018 148(12):1968–75.

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## Dementia prevention: moving beyond a single-nutrient approach

Adherence to the Mediterranean diet, which emphasizes fruits, vegetables, nuts, olive oil, and moderate intakes of fish, provides the most convincing evidence to date that diet plays an important role in preventing or delaying dementia. However, while the scientific literature documenting the link between mono- and polyunsaturated fatty acids and cognitive function during is aging is plentiful, the findings are inconsistent. To address this concern, [Kesse-Guyot and colleagues](#) evaluated the association between intakes of unsaturated fatty acids, cognitive performance, and a possible modulating role of antioxidant supplementation in a study published in the December issue of *The Journal of Nutrition*. Fatty acid intakes were estimated and participants were randomly assigned to an antioxidant supplementation or placebo group. At follow-up, total mono- and polyunsaturated fatty acid intakes showed positive associations with overall cognitive function. Omega-3 fatty acid intakes showed positive associations among supplemented participants only. In the placebo group, the fatty acid arachidonic acid was found to have a detrimental relation with cognitive functioning. This study helps to explain disparities in findings on the link between polyunsaturated fatty acid intakes and age-related cognitive decline. Adequately high intakes of omega-3 fatty acids in conjunction with antioxidant nutrients may be related to better cognitive function, but given the specificities of the study's design, no direct causal inference can be made.

**Reference:** Assmann KE, Adjibade M, Hercberg S, Galan P, Kesse-Guyot E. [Unsaturated fatty acid intakes during midlife are positively associated with later cognitive function in older adults with modulating effects of antioxidant supplementation.](#) *J Nutr* 2018 148:1938–45.

**For More Information:** To contact the corresponding author, Emmanuelle Kesse-Guyot, please send an email to [e.kesse@eren.smbh.univ-paris13.fr](mailto:e.kesse@eren.smbh.univ-paris13.fr).

Read full summaries [here](#).

## JN Editor's Choice Articles

### Purine metabolite concentrations are altered by diets that limit exposure to milk-derived exosomes and their RNA cargos

Cells excrete lipids, proteins, and various forms of RNA in exosomes, which can be taken up by other cells through endocytosis. Exosomes are produced by most cells, including those found in our food supply. For example,

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Headed consumption and modified diets in older adults  
Dietary intake patterns for risk and overall health status  
Dietary supplementation and cognitive performance  
Fatty acid intake and cognitive function in older adults  
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exosomes found in bovine milk carry microRNA that are found in elevated amounts in plasma after consuming milk, suggesting that they are readily available. However, little is known about the physiologic responses to the exosome-derived microRNA found in bovine milk. Studies conducted by [Aguilar-Lozano and colleagues](#) are reported in the December issue of *The Journal of Nutrition* that evaluate the impact on purine metabolism. Their studies used mice consuming diets containing depleted or sufficient levels of exosomes and RNA, humans that consume or avoid dairy products, and infants consuming human milk, milk formula, or soy formula. They discovered that several hepatic purine metabolites were elevated in mice consuming the depleted diet. Furthermore, they found that plasma and urine concentrations of purine metabolites were greater in adults that avoided dairy products and in the urine of infants consuming soy formula. The authors suggest that these data support the potential of diet-derived exosomes containing microRNA to influence critical physiologic processes, making them potentially important to the health and development of humans.

**Reference:** Aguilar-Lozano A, Baier S, Grove R, Shu J, Giraud D, Leiferman A, Mercer KE, Cui J, Badger TM, Adamec J, Andres A, Zempleni J.

[Concentrations of purine metabolites are elevated in fluids from adults and infants and in livers from mice fed diets depleted of bovine milk exosomes and their RNA cargos.](#) *J Nutr* 2018 148(12):1886–94.

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### **Stable isotope ratios are able to serve as biomarkers of certain types of foods**

Accurately estimating food intake patterns is one of the greatest challenges to nutritional studies involving human subjects. Although many improved approaches have been developed they are still reliant on subjects accurately reporting intake and effective nutrient composition databases. One approach to estimating intake for archeological samples has been through the use of stable isotope ratios for carbon, nitrogen and sulfur. However, the effectiveness of this approach has not been evaluated in controlled dietary studies. [Yun and colleagues](#) report the results of a study using 153 postmenopausal women in which habitual diets were provided to the individuals and isotope ratios were determined using plasma at the beginning and the end of the study. The manuscript, along with a [commentary provided by Kuhnle](#), is published in the December issue of *The Journal of Nutrition*. The authors of both papers conclude that the nitrogen isotope ratios are able to predict the consumption of fish and seafood and that carbon isotope ratios can be effective in estimating intake of red meat and eggs. However, the data were not able to predict intake of sugars. The best predictive models included information on subject characteristics, such as race/ethnicity, BMI, and physical activity.

**References:** Yun HY, Lampe JW, Tinker LF, Neuhaus ML, Beresford SAA, Niles KR, Mossavar-Rahmani Y, Snetselaar LG, Van Horn L, Prentice RL, O'Brien DM. [Serum nitrogen and carbon stable isotope ratios meet biomarker criteria for fish and animal protein intake in a controlled feeding study of a Women's Health Initiative Cohort.](#) *J Nutr* 2018 148(12):1931–7.

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**Commentary provided by:** Kuhnle GGC. [Stable isotope ratios: nutritional biomarker and more.](#) *J Nutr* 2018 148(12):1883–5.

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