



**June 2015 Media Alert:
*The Journal of Nutrition***

The following articles are being published in the June 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.

[**Daily cranberry juice consumption linked to healthier cardiometabolic profiles**](#)

[**Breastfeeding associated with lower risk for obesity and risk factors for later chronic disease**](#)

[**Consumption of a protein-rich beverage at bedtime augments the increase in muscle mass and strength in response to resistance exercise training**](#)

Daily cranberry juice consumption linked to healthier cardiometabolic profiles

Today's long lifespans coupled with the burgeoning obesity rates have led to "cardiometabolic" diseases (cardiovascular disease, stroke, and type 2 diabetes) becoming the world's leading causes of death. Although exactly how these diseases develop and cause harm to the body is certainly complex and not well understood, high blood pressure and chronic inflammation as well as elevated blood lipids and glucose are likely involved. As such, clinicians and public health officials continue to search for ways to prevent and reverse these symptoms, including understanding the impact of various dietary pattern and certain foods, beverages, and nutrients. Cranberry juice is one such beverage because it is rich in a group of compounds referred to as polyphenols which have a variety of health-promoting effects. For instance, procyanidin (one of the polyphenols) lowers circulating C-reactive protein (a biomarker of chronic inflammation) in laboratory rats. However, studies conducted to investigate the health benefits of cranberry juice have typically involved just a few participants and have not been particularly well controlled, making their results inconsistent and somewhat difficult to interpret. In a study published in the June 2015 issue of *The Journal of Nutrition*, however, a high-caliber research collaboration among government and industry scientists (US Department of Agriculture and Ocean Spray Cranberries) report the results of a well-controlled and relatively large study they conducted to help fill this research gap.

This study, overseen by Dr. Janet Novotny at the USDA used the gold standard of experimental designs: a double-blind, placebo-controlled, dietary intervention study with precise dietary intakes. In brief, 56 men and women were assigned randomly to consume two servings of low-calorie cranberry juice or a similar-tasting red beverage containing no cranberry juice. The beverages were similar in calorie content. During the 8-week study, participants were provided with all other foods and beverages, which

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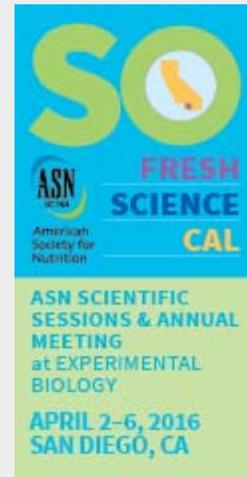
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were designed to provide adequate nutrients and maintain current body weight. At the beginning and end of the study, each subject was carefully evaluated for a battery of indices related to cardiometabolic risk, such as blood lipids (e.g., cholesterol and triglycerides), blood sugar regulation, blood pressure, and C-reactive protein.

Consuming two servings of cranberry juice daily for 8 weeks significantly improved many of the cardiometabolic variables studied, including diastolic blood pressure (vascular pressure when the heart is resting), C-reactive protein, and circulating triglycerides and glucose. The researchers concluded, "Consumption of high-polyphenol products such as cranberry juice is a sustainable lifestyle practice that holds notable promise for improving health." Indeed, perhaps we need to remind ourselves that cranberries shouldn't just be served with the Thanksgiving meal. They represent a great fruit option year-round.

Reference Novotny JA, Baer DJ, Khoo C, Gebauer SK, Charron CS. Cranberry juice consumption lowers markers of cardiometabolic risk, including blood pressure and circulating C-reactive protein, triglycerides, and glucose concentrations in adults. *Journal of Nutrition* 145:1185-93, 2015.
For More Information To contact the corresponding author, Dr. Janet Novotny, please send an e-mail to Janet.Novotny@ars.usda.gov.

Breastfeeding associated with lower risk for obesity and risk factors for later chronic disease

Breastfeeding is universally recognized as the best way to feed a baby, especially in regions of the world where no safe alternatives are available and infant morbidity and mortality are the highest. Having been breastfed in infancy is also associated with lower risk for certain conditions in later life, such as obesity, some forms of cancer, and diabetes. However, very few studies have been designed in such a way to relate early feeding patterns (e.g., breastfeeding vs. formula feeding) with metabolic markers for chronic disease in later life. This is important because statistical associations do not prove causality, and it is possible that other factors might mediate the correlation between early feeding and later health. In addition, understanding the time course of disease progression and how it is related to early feeding practices would add important insight as to how various chronic conditions might develop, and importantly how and when they might be prevented. Recently, a team of international nutritionists led by Dr. Juan Rivera at the Mexican National Institute of Public Health evaluated whether early breastfeeding was related to risk for obesity and various cardiovascular disease risk factors in preschool-age Mexican children. Their results can be found in the June 2015 issue of *The Journal of Nutrition*.

This study was an offshoot of a previously conducted investigation related to the effects of prenatal maternal omega-3 fatty acid supplementation on child growth and cognitive development. In this secondary analysis, the researchers used data from 524 of the original study cohort who had both feeding information at 3 months of age and complete follow-up data (including blood samples) at 4 years of age. Extent of breastfeeding was characterized as being exclusive/predominant, partial, or none at 3 months. Duration of breastfeeding was characterized as being < 3, 3-6, or 6-12 months, or more than one year.

Compared to those who were still exclusively/predominantly breastfed, children who weren't breastfed or were partially breastfed at 3 months of age had greater adiposity and higher serum insulin concentrations when they were 4 years old. Children who had never been breastfed also had higher total cholesterol than those who were exclusively/predominantly breastfed at 3 months. Having been breastfed for more than a year was also associated with lower risk for obesity at 4 years. The authors concluded, "The present study provides evidence of an association between adherence to recommended infant feeding patterns (exclusive and predominant breastfeeding at 3 months of age and total duration of breastfeeding > 12

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months) and lower adiposity and improved cardiometabolic markers in a contemporary cohort of Mexican children."

Reference Ramirez-Silva I, Rivera JA, Trejo-Valdivia B, Martorell R, Stein AD, Romieu I, Barraza-Villarreal A, Ramakrishnan U. Breastfeeding status at age 3 months is associated with adiposity and cardiometabolic markers at age 4 years in Mexican children. *Journal of Nutrition* 145: 1295-302, 2015.

For More Information To contact the corresponding author, Dr. Juan Rivera, please send an e-mail to jrivera@insp.mx.

Consumption of a protein-rich beverage at bedtime augments the increase in muscle mass and strength in response to resistance exercise training

Everyone knows that resistance exercise, such as weight lifting, can increase skeletal muscle mass and strength given that adequate calories and nutrients are consumed. But much less is known about whether particular dietary supplements can impact the extent of this benefit. Moreover, researchers are still identifying when is the best time to consume these supplements in relation to time of day and exercise. Many studies suggest that consumption of a high-quality protein source (such as milk) immediately after training is beneficial. In addition, consuming a good source of protein right before going to bed might help. However, research results are inconsistent in this regard. In a study published in the June 2015 issue of *The Journal of Nutrition*, a research team led by Dr. Luc van Loon (Maastricht University, the Netherlands) once again investigated this issue, but this time in a relatively large randomized, placebo-controlled human trial. Their results provide strong evidence that consumption of a protein-rich beverage right before bedtime might, in fact, be an effective strategy.

To test their hypotheses, the researchers studied 41 healthy young men who were recreationally active but not currently participating in structured resistance-type training. Each subject completed a resistance exercise program consisting of a series of lower and upper body exercises three times a week for three months. Training sessions were performed in the late evening, after which all subjects consumed a cheese sandwich and apple. Each night of the study, immediately before going to bed, subjects in the intervention group drank a 180-kcal beverage containing dairy protein, carbohydrates, and a small amount of fat. The control group consumed a non-calorie "placebo" beverage that tasted and looked similar to the protein-rich drink. Subjects did not know to which group they had been assigned.

As expected, all subjects increased muscle mass and strength over the duration of the study. However, consumption of the protein-rich beverage amplified this effect. In general, compared to the placebo, benefits of exercise were nearly doubled when the protein supplement was consumed. However, because the supplement provided a combination of protein, carbohydrates, and fat additional studies will be needed to determine which of these components is responsible or if all are needed to reap the benefit.

Reference Snijders T, Res PT, Smeets JSJ, van Vliet S, van Kranenburg J, Maase K, Kies AK, Verkijk LB, van Loon LJC. Protein ingestion prior to sleep increases muscle mass and strength gains during prolonged resistance type exercise training in healthy, young men. *Journal of Nutrition* 145: 1178-84, 2015.

For More Information To contact the corresponding author, Dr. Luc van Loon, please send an e-mail to L.vanLoon@maastrichtuniversity.nl.

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