



The Journal of Nutrition – February 2018
Media Summaries

The following articles are being published in the February 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.

Study: eating eggs for breakfast may help stimulate fat breakdown

Blueberries decrease inflammation and regulate blood sugar levels in rats eating a high-fat diet; possible involvement with gut microbes

Modest milk consumption linked to better iodine status in women

Study: eating eggs for breakfast may help stimulate fat breakdown

With the majority of Americans overweight or obese, most could benefit from losing a little body fat. But for most of us, making this happen is much easier said than done. Do we eat less, exercise more, or both? Alternatively, can we simply shift our dietary patterns to somehow trigger fat loss without having to change much else? A study published in the February 2018 issue of *The Journal of Nutrition* suggests that consuming a higher-fat, lower-carbohydrate breakfast might help us break down body fat throughout the day. These results parallel similar findings in mice, providing evidence that eating a higher-fat breakfast not only helps stabilize body weight but also provides cardiovascular benefits. The study, briefly described below, was conducted by Dr. Nikki Bush and colleagues at the University of Alabama at Birmingham. Accompanying the publication is a commentary by Dr. Maria Luz Fernandez (University of Connecticut) highlighting the importance of both this research and the overarching concept that our health not only responds to *what* we eat, but also *when* we eat certain types of foods.

This study was carried out as a randomized dietary intervention trial and involved 29 healthy but relatively inactive men and women, half of whom were assigned to consume a higher-fat breakfast for 4 weeks while the other half were provided higher-carbohydrate breakfast options for a similar period of time. The breakfasts were similar in their calorie and protein contents. As such, any documented differences between groups could be largely attributed directly to either the fat content of the breakfast or other more minor components it contained. For the most part, the inclusion (or exclusion) of eggs made the difference in breakfast types with participants assigned to the higher-fat groups eating at least one egg five days each week. Other meals throughout the day were similar between groups. At the beginning and end of the study, each subject participated in laboratory tests designed to understand their energy metabolism and how much fat they were burning. Blood was also analyzed for a variety of factors such as glucose.

Although subjects tended to lose weight regardless of which group they were in, there was no differential effect of breakfast type on weight loss or body fat. However, the subjects consuming the higher-fat, egg-containing breakfast options increased how much fat they were burning over the course of the study. This effect was not seen in the group consuming the higher-carbohydrate breakfasts. In addition, at the end of the study those consuming the higher-fat breakfasts appeared to have better blood sugar regulation. The researchers concluded that their data may suggest a benefit of consuming a higher-fat (lower-carbohydrate) breakfast, not only on mobilization of body fat but also to reduce the risk of metabolic disease such as type 2 diabetes.



References Bush NC, Resuehr HES, Goree LL, Locher JL, Bray MS, Soleymani T, Gower BA. A high-fat compared with a high-carbohydrate breakfast enhances 24-hour fat oxidation in older adults. *Journal of Nutrition* 2018 148:220-26. Fernandez ML. Commentary: a high-fat breakfast enhances 24-hour oxidation in older adults. *Journal of Nutrition* 2018 148:172-73.

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Blueberries decrease inflammation and regulate blood sugar levels in rats eating a high-fat diet; possible involvement with gut microbes

Although we have long known that our gastrointestinal tracts are teeming with literally trillions of microbes, only recently have scientists begun to scratch the surface in terms of learning what these bacteria do to earn their keep. In a paper published in the February 2018 issue of *The Journal of Nutrition*, researchers from the University of Georgia report their findings supporting the likelihood that variation in our resident microbial communities can impact incredibly important health metrics such as chronic inflammatory status and even blood sugar regulation. In addition, and what makes this study particularly relevant, is that the researchers stimulated these microbial shifts via feeding laboratory rats powdered blueberries. Interestingly, blueberry supplementation reversed many of the negative effects of feeding the animals a high-fat diet.

The research team, led by Dr. Claire de La Serre, set out to test their hypothesis that combining a high-fat diet with blueberry powder would alter gut microbe composition and reduce intestinal leakiness, inflammation, and insulin resistance. To do this, they randomly assigned 24 rats to one of three groups: one consumed a low-fat diet, another a high-fat diet, and a third a diet high in both fat and blueberries. It is noteworthy that the high-fat diet provided about 45% of its calories as fat – a value not uncommon in the US population. The animals consuming the high-fat diets with and without blueberries were fed the same amount of food and fibers so that differences could be attributed solely to the presence or absence of blueberries. A variety of outcomes were assessed, including increases in blood sugar and insulin levels after oral glucose administration, gut microbiota composition, integrity of the intestine, and inflammatory markers.

As expected, they found that consuming the high-fat diet (without blueberries) led to compromised blood sugar regulation, impaired intestinal health, and evidence of intestinal and systemic inflammation. However, adding blueberry powder to the high-fat diet seemed to prevent these negative effects. Blueberry supplementation also altered gut microbial communities, and this appeared to be associated with the other documented benefits. Additional studies will be needed to understand what components of blueberries are responsible for these affects. For instance, blueberries are notably rich in compounds called “anthocyanins,” which have long been known to reduce inflammation and oxidative stress. Whether these compounds have these effects via changing the gastrointestinal microbes will require additional studies.



Reference Lee S, Keirsey KI, Kirkland R, Grunewald ZI, Fischer JG, de la Serre CB. Blueberry supplementation influences gut microbiota, inflammation, and insulin resistance in high-fat fed rats. *Journal of Nutrition* 2018 148:209-19

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