

New research provides a broader perspective on the nutritional effects of egg consumption in young, healthy adults

October 25 2023, by Anna Zarra Aldrich



Credit: Erika Varga, Pixabay

Are eggs good for you?

Scientists have been studying this divisive question for years. Some have found that egg intake increases LDL, or "bad" cholesterol, and inflammatory markers associated with [heart disease](#) and diabetes, while others have highlighted the benefits of egg consumption thanks to their nutritional density.

Catherine J. Andersen, associate professor of nutritional sciences in the College of Agriculture, Health and Natural Resources, recently published a study in [Nutrients](#) that provides a broader perspective on the nutritional outcomes of egg consumption in healthy young adults.

Most existing research articles that evaluate the health effects of [eggs](#) tend to focus on a more limited range of standard clinical measurements, looking at biomarkers for heart disease, diabetes, body composition, inflammation, immune health, and anemia in isolation, rather than all together. Participants in these studies also tend to have pre-existing [risk factors](#) for chronic disease. They typically also follow additional dietary regimen changes like weight loss plans. These factors can complicate interpretations of how eggs affect health markers in the general or young, healthy population.

Andersen and her collaborators conducted a more comprehensive, clinically-focused study that considered many health measurements a doctor would look at during a routine physical.

"It helps to provide a comprehensive picture of the effects of egg intake in a young, healthy population utilizing standard, routine clinical biomarkers," Andersen says. "We believe that allows for greater translation to the general public."

The study compared eating no eggs, three egg whites per day, and three whole eggs per day. Participants could prepare the eggs however they preferred.

Andersen found that [blood samples](#) showed a significant increase in choline, an essential nutrient found in egg yolks, when participants ate whole eggs daily. Choline intake has been associated with increases in a metabolite known as TMAO, which is linked to heart disease. But Andersen's study found that TMAO did not change in this population despite increases in choline.

"That's kind of the best-case scenario," Andersen says. "We want to have rich amounts of this important nutrient, but not increase this metabolite that could potentially promote cardiovascular disease."

The researchers did not see any adverse changes in inflammation or blood cholesterol levels either. They also found that eating whole eggs had less of a negative impact on markers associated with diabetes risk than eating egg whites.

Overall, participants had greater nutrient density in their diet when consuming the whole eggs, in addition to higher hematocrit—a measure of red blood cell density in the blood, which can be lowered in anemia.

"The fact that we were looking at the comprehensive range of measurement allows for a better assessment of the overall effects of egg intake that one might expect," Andersen says. "I think that's important because if you see one marker change that is less positive, you can see, perhaps in context, beneficial shifts in others."

The study included both male and female participants. About half of the female participants were taking a combination oral birth control pill. This allowed Andersen to look at potential differences between the nutritional outcomes for women taking the pill versus those who were not.

"These are very common medications, and there are a lack of studies

that have looked at the effect of taking these medications on how one might respond to a dietary intervention," Andersen says.

While not all statistically significant, the researchers did observe some differences in this sub-group.

Blood samples from [female participants](#) who were not taking the pill had greater increases in the ratio of total cholesterol to HDL-cholesterol, which is considered a risk factor for heart disease.

"That was the opposite of what we could expect," Andersen says.

"Because hormonal birth control medications are often associated with adverse metabolic changes. But in this case, it seemed to have more of a protective effect in response to eggs."

Female participants who were not on the pill also had greater increases in blood monocytes compared to participants who were taking the pill. Monocytes are part of the body's first-line immune defense. Interestingly, regardless of medication use, changes in clinical immune profiles from whole egg intake correlated with a number of clinical HDL measures.

This paper is the first in a series in which Andersen is looking at mechanistic pathways related to egg intake and the HDL-immune relationship. Other questions her lab is addressing include the composition of HDL particles and their capacity to regulate the activity of immune cells, since it was recently found that HDL can carry hundreds of proteins, not just cholesterol. Andersen also plans to explore differences in nutritional outcomes of eating eggs in older versus younger participants.

"The trend in the field of nutrition is to establish a framework for making precision or personalized nutrition recommendations, and

explore how differences age, sex, genetics, microbiome composition, and more can impact an individual's response to dietary intervention," Andersen says. "Certainly, that's something my lab and others in my department are starting to look at more."

More information: Catherine J. Andersen et al, Consumption of Different Egg-Based Diets Alters Clinical Metabolic and Hematological Parameters in Young, Healthy Men and Women, *Nutrients* (2023). [DOI: 10.3390/nu15173747](https://doi.org/10.3390/nu15173747)

Provided by University of Connecticut

Citation: New research provides a broader perspective on the nutritional effects of egg consumption in young, healthy adults (2023, October 25) retrieved 6 May 2024 from <https://medicalxpress.com/news/2023-10-broader-perspective-nutritional-effects-egg.html>

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