



Research summary

Long-term beneficial effects on cardiovascular risk factors associated with egg consumption

About the study

Cardiovascular disease is the leading cause of death globally. It has been long questioned the connection between egg consumption and cardiometabolic risks factors such as high blood pressure and impaired fasting glucose or type 2 diabetes. In a study funded by the Egg Nutrition Center, the association between egg consumption and such risk factors was studied using eligible participants in the Framingham Offspring Study.¹

Methods

Data from a subsample of 2,349 adults (30-64 years) in the Framingham Offspring Study were used to evaluate relevant outcomes: fasting glucose, blood pressure, type 2 diabetes or impaired fasting glucose and high blood pressure. Study participants completed examinations approximately every four years and participants completed three-day dietary records using a standardized protocol where egg intake, including whole eggs, composite foods (e.g. mayonnaise) and mixed dishes (e.g. quiche) were monitored. Dietary records were then reviewed and confirmed by a nutritionist.

Blood samples were taken following an overnight fast to estimate glucose, insulin, lipid levels and other regulating factors. Several other elements were recorded during the analyses as potential contributors. These included age, sex, dietary fibre intake, baseline body mass index (BMI), consumption of solid fats and alcohol beverages, and physical activity level.



¹ The Framingham Heart Study was started in 1948 to investigate cardiovascular disease (CVD) in a cohort of adult men and women. In 1971 the Framingham Offspring Study began when the children of the original study were used to expand cardiovascular disease knowledge. The participants have been typically examined every four years for the development of CVD and other health outcomes.



Findings

Consuming five or more eggs per week was linked with lower fasting glucose concentrations compared to those who consumed less than 0.5 eggs per week after four years of follow-up. This demonstrates that consuming five or more eggs per week had no adverse effect on fasting glucose among healthy adults. In fact, higher egg intake showed the potential to contribute to lower levels of fasting glucose. When adjusted for age, sex, dietary fibre and BMI, this relationship was stronger among overweight individuals.

Overall, participants who consumed more eggs and with a normal fasting glucose had a lower risk of developing impaired fasting glucose or type 2 diabetes over the decade following. These beneficial effects may be attributed to the nutrient composition of eggs. For example, the protein content of eggs may substitute dietary carbohydrates, which has a higher glycemic load, influencing glucose metabolism. The researchers noted a further strengthened relationship between egg consumption and blood glucose when consumed as part of healthy diet patterns with higher intakes of dairy, fish, dietary fiber and fruits and non-starch vegetables.

The study also found that the consumption of five or more eggs per week resulted in lower systolic blood pressure compared to those that consumed less than 0.5 eggs per week. Additionally, higher egg intake was related to lower risk of developing high blood pressure. The decrease in blood pressure may be explained in part due to the substantial

antioxidant capacity of bioactive peptides found in the protein in eggs, and may inhibit angiotensin-converting enzymes, thereby lowering blood pressure. Predictably, these effects were stronger in individuals that had a higher intake of healthy foods.

Conclusions

The study found that the consumption of five or more eggs per week does not have adverse effects on glucose or blood pressure outcomes. Rather, a moderate intake of eggs may in fact reduce the risk of developing impaired fasting glucose or type 2 diabetes and high blood pressure when consumed as part of a healthy diet.

Funding for this study was provided through the Egg Nutrition Center, a research partner of Egg Farmers of Canada.

Citation

Mott MM, Zhou X, Bradlee ML, Singer MR, Yiannakou I, Moore LL. *Egg Intake Is Associated with Lower Risks of Impaired Fasting Glucose and High Blood Pressure in Framingham Offspring Study Adults*. *Nutrients*. 2023 Jan 18;15(3):507. doi: 10.3390/nu15030507. PMID: 36771213; PMCID: PMC9920838.



Visit eggfarmers.ca or contact us at research@eggs.ca for more information about Egg Farmers of Canada or our research program.

