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## Benefits of egg intake in diverse populations

**Statement of the Problem:** Recently the 2015 US Dietary guidelines removed the upper limits for dietary cholesterol. However, due to its cholesterol content, there is still uncertainty regarding egg consumption and risk of heart disease. Further, recent information about the potential role of plasma trimethyl amine-N-oxide (TMAO) in increasing cardiovascular risk, has brought further concerns regarding intake of eggs. In previous studies, we demonstrated that egg consumption does not increase the biomarkers for heart disease in children, young and older populations, subjects with metabolic syndrome or patients with type-2 diabetes. In contrast, eggs have been demonstrated to have protective effects by increasing plasma antioxidants, plasma choline and decreasing the number of atherogenic lipoproteins.

**Objective:** The objective of this study was to demonstrate that eggs exert protection against chronic disease without increasing the biomarkers for cardiovascular disease

**Methods:** We conducted a study in which 40 healthy participants following a 2 week washout in which 0 eggs were consumed, they ate 1, 2 and 3 eggs per week for 4 weeks each (see diagram). Following each dietary period, blood was taken and plasma lipids, lipoprotein number and size, plasma carotenoids and other antioxidants in addition to plasma concentrations, a marker of cardiovascular risk were measured.

**Results:** Compared to 0 egg intake, consuming 1-3 eggs per day resulted in higher concentrations of HDL cholesterol, apolipoprotein A-I, lecithin cholesterol acyl transferase and large HDL, all parameters associated with reverse cholesterol transport. Furthermore, no changes in plasma LDL cholesterol were observed when compared to 0 eggs while large LDL, the less atherogenic particle was increased. There was a significant increase ($p<0.01$) of plasma lutein and zeaxanthin after the consumption of 2 eggs per day as well as on paraoxanase-1 activity and plasma choline. Intake of 1 egg per day was sufficient to increase HDL cholesterol; however more than 2 eggs resulted in higher benefits as seen by the higher concentrations of plasma carotenoids and plasma choline.

**Conclusions:** These results indicate that egg intake does not increase the biomarkers for heart disease but results in additional anti-oxidant and anti-atherogenic benefits.

## Biography

Maria Luz Fernandez is a Professor in the Department of Nutritional Sciences at the University of Connecticut. She is a leading authority on the effects of dietary interventions on dyslipidemias, oxidative stress and inflammation as it relates to cardiovascular disease, metabolic syndrome and type-2 diabetes. She uses the guinea pig model to elucidate the mechanisms by which different types of fat, dietary fiber, carbohydrate restricted diets and antioxidants reduce the risk for hepatic steatosis, systemic inflammation and atherosclerosis. Her research has been supported by the Federal Government, Industry and Food Commodities. She has co-authored 235 peer-reviewed papers, 13 book chapters plus over 240 scientific abstracts. She has been invited to present her research in Argentina, Brazil, Canada, Colombia, Egypt, Ecuador, Korea, Mexico, Panama, Peru, Portugal, Spain, Saudi Arabia and United Arab Emirates.

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