

Reviewer's report

Title: Daily egg consumption in hyperlipidemic adults - Effects on endothelial function and cardiovascular risk

Version: 1 **Date:** 3 November 2009

Reviewer: Michael Shechter

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In a prospective study the authors demonstrate that single dose egg consumption had no effects on endothelial function compared to sausage/cheese. Furthermore, 6-week daily consumption of egg substitute improved endothelial function compared to egg and lowered serum total and LDL cholesterol.

Major comments:

1. The main limitation of this study is the very small study population (only 37 subjects) which limits its effectiveness in detecting true change/improvement in the flow-mediated dilation (FMD). The authors provided a power calculation based on a 3.5% change in FMD between egg and egg substitute. Authors should give the reference to their assumption.
2. Since the study population is very small it is crucial to provide data on the patients' basic characteristics in a table. The data should include sex, age, CAD risk factors, body mass index, concomitant medications (especially those which can impact FMD, such as statins, ACE/ARB, ASA, calcium channel blockers, diuretics, nitrates, vitamins, food supplements, etc.), some laboratory parameters which could impact endothelial function such as lipids, fasting glucose, electrolytes, CBC, etc. In addition, patient's blood pressure should be included. What was the Framingham 10-year risk of the subjects? Table 1 should be more comprehensive and also should include the above data.
3. The authors should also provide the baseline brachial artery diameter (in mm) since FMD is usually inversely related to the brachial artery diameter (S. Schroeder, MD, Enderle, A, Baumbach, et al. Influence of vessel size, age and body mass index on the flow-mediated dilatation (%FMD) of the brachial artery. *Int J Cardiol.* 76 (2000) 219-225).
4. Did the authors find any correlation between total- or LDL-cholesterol and FMD? Did the authors control their findings to concomitant medications and or other variables which could affect FMD (such as lipoproteins, age, sex, hypertension, etc.)? Some studies have found an association between LDL change and FMD (Shechter M, et al. Improvement in endothelium-dependent brachial artery flow-mediated vasodilation with low-density lipoprotein cholesterol levels < 100 mg/dl. *Am J Cardiol* 2000;86:1256-1259).
5. Authors should specify in a table the exact composition of each acute/ -6-week

breakfast sandwich (proteins, fats, sugar, etc). Did the subjects also consume any beverage? Tea? Coffee?

6. Was FMD measured while the patients were fasting? Were the patients under the influence of any medication? Influence of cigarettes?

7. Was the BART performed after a single dose of breakfast (Mickey – not sure what u mean)? Since FMD is blunted after a high fat meal (mainly due to high triglycerides) for about 6 hours it is important to report on lipoproteins (including triglycerides).

8. How were the subjects randomized? Was the FMD reader blinded to the breakfast type?

9. The BART protocol should be described in detail. Was a lower- or upper-cuff used? For how many minutes was the cuff inflated? Was the reading synchronized with ECG? Did authors measure nitroglycerin-induced vasodilation? What was the reproducibility of the test in the authors' lab?

10. There are many variables which could potentially impact FMD, including carbohydrates etc. in the food. Authors should measure carbohydrate index of the food under which FMD was measured (Talia L, et al. The acute effect of various glycemic index dietary carbohydrates on endothelial function in normoglycemic subjects. J Am Coll Cardiol 2009;53:2283-2287)?

11. Page 9, 5st line of the Discussion: "while the subjects demonstrated impaired endothelial function at baseline...". Authors should define "normal" and "impaired" endothelial function and should give a reference.

12. Did subjects undergo blood withdrawal on the same day as the BART? When exactly in relation to the FMD?

13. What was the Framingham 10-year risk of the subjects?

14. Page 5, 2nd paragraph: I did not see Figure 1.

15. The Discussion section is too long and should be shortened.