

Reviewer's report

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

Version: 1 **Date:** 9 November 2009

Reviewer: Kevin Ballard

Reviewer's report:

Major Compulsory Revisions

1. The rationale for conducting the study is sound. However, a statement/paragraph should be added relating endothelial function, specifically FMD, to coronary outcomes and cardiovascular disease. See Yeboah J. *Circulation*, 2009.
2. What was the rationale for conducting the acute ingestion trial and what results were you hoping to see following acute ingestion? How long post-ingestion were vascular and blood measurements made? How does the composition of the meals and timing of vascular/blood measurements compare to previous studies investigating the acute effects of meal ingestion?
3. Prior to randomization, were subjects matched on pertinent variables (i.e., age, sex, BMI, cholesterol, etc.) to control for potential baseline differences?
4. What controls were implemented prior to endothelial function and blood testing (i.e., how many hours fasted, without caffeine, exercise, alcohol, time of day?)?
5. Please provide much more description regarding your endothelial function testing protocol. Where on the arm was the cuff placed? What was the occlusion pressure? What does "automate the brachial artery diameter measures" mean? What was the angle of insonation used to obtain accurate velocity measurements? Was an attempt made to calculate shear rate/shear stress as a stimulus inducing the FMD response? Why was FMD measured only at 60 sec post-occlusion compared to the true peak diameter (see Black MA et al. *Hypertension*, 2008)?
6. Why were blood concentrations of lipids used as a baseline for both trials? Differences in blood concentrations may have differed over the course of 10 weeks had blood been drawn prior to each 6 week trial period. The same question for weight and BMI.
7. The contribution of nitric oxide to FMD differs depending on the technique utilized, particularly in regards to the use of upper arm vs. forearm occlusion (see Doshi SN et al. *Clin Sci (Lond)*. 2001). This further necessitates further description of the technique utilized in the present study.
8. A paragraph needs to be included providing supporting evidence of the relationship between the endothelium, FMD, and cardiovascular disease. Without a discussion of this relationship(s), no connection can be made by the reader

between endothelial function and cardiovascular complications.

Minor Essential Revisions

Abstract

- The stated objective was “to assess the effects of daily egg consumption on endothelial function and serum lipids in hyperlipidemic adults”. However, this study also investigated the acute vascular and lipid effects of egg consumption. This should be stated as well.
- Please include descriptive characteristics of subjects within the abstract (mean±SD for age, weight, BMI, serum cholesterol concentration, etc.).
- Please elaborate your Conclusions or combine the two sentences into one declarative sentence.

Introduction

- Throughout the text please place the reference number before the period at the end of each sentence.

Methods

- Page 5, paragraph 2: Triglycerides are listed twice within the same sentence. Also, it is stated “see figure 1.” No figures were included with the files I received. Should this be Table 1?
- Page 5, paragraph 3, 1st sentence: Please move this sentence to the end of paragraph 3 following the description of the acute phase meals.
- What was the kilocalorie and macronutrient content of the meals used in the acute phase?
- For the acute phase, three medium hardboiled eggs were consumed. However, only 2 eggs per day were consumed in the sustained phase. Please describe your rationale for this difference.
- How long following the acute phase did subjects begin the 6 week trial?
- How was daily ingestion of eggs or egg substitute monitored?
- Was the kilocalorie content of the two hardboiled eggs and ½ cup of egg substitute equal?
- What were the macronutrient compositions of the eggs, egg substitute, and breakfast sandwich? What was your rationale for choosing the breakfast sandwich as a comparison for the eggs in the acute phase?
- Please provide a reference for choosing blood flow within the first 15 sec after cuff deflation as an indicator of stimulus strength? How might have the results differed if the entire shear stress stimulus was accounted for? Refer to reviews by Pyke KE and Tschakovsky ME on this subject.
- Page 6, paragraph 3: What do you mean by saying Tchol, TRIG, and HDL were obtained by direct measurements? Please provide a reference for your calculation of VLDL and LDL? No mention of the VLDL results are provided.

- Page 7: How was blood pressure determined? Did the same investigator perform all blood pressure measurements?
- Was dietary pattern recorded the three days prior to vascular testing or at three arbitrary days during the 6 week trials? Were three day food records replicated prior to each measurement of endothelial function?

Results

- Page 8, paragraph 1: Please refer readers to Table 1 within the 1st paragraph of page 8.
- What were the mean height, BMI, and blood pressure of the subjects? This may be included in the text or Table 1.
- Do the tables represent data from 60 subjects or 56?
- Significant differences in SARM were detected at baseline. Was an attempt made to correct for this?
- Page 8, paragraph 3, 1st sentence: This sentence is repetitive.
- The n for Table 3 should be 36 and not 40 as stated within the text.
- Is a 1.0% improvement in FMD physiologically important/significant? What is the meaningfulness of a change of this magnitude? See Shimbo D et al. Atherosclerosis. 2007.
- What was the total protein intake of the subjects? This data should be included in Table 3 as well.
- Where are the VLDL results as mentioned in the Methods?

Discussion

- Page 9, paragraph 2, sentence 3: Who are you comparing the subjects in the present study with when saying “the subjects demonstrated impaired endothelial function at baseline”?
- Sentence 4: This sentence is very confusing to me. Please re-word.
- Page 9, paragraph 3, sentence 4: Please provide references following “but is at odds with the reported literature.”
- Please provide a reference when discussing differences in gastric transit times.
- Page 10, paragraph 1, sentence 2: Several studies have examined FMD serially over time following meal ingestion (see Vogel, Plotnick, Marchesi, Ng, etc.).
- Page 10, paragraph 3: This paragraph is confusing to me. You begin by discussing the effects of egg consumption on HDL. However, no mention is made to your present results. In the next sentence, an attempt is made to explain a mechanism of why blood cholesterol does not increase with increasing dietary cholesterol intake. I am not seeing the connection here.

Level of interest: An article of importance in its field

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.