Reviewer’s report

Title: Serum concentration of eicosapentaenoic acid is associated with cognitive function in patients with coronary artery disease

Version: Date: 4 September 2014

Reviewer: Ann Skulas-Ray

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Discretionary Revisions

1. There doesn’t appear to be any evaluation of correlations between serum fatty acids and measurements of cardiac function (BNP and LVEF). Testing potential correlations here could help to further illuminate the relationships between serum PUFA, MMSE scores, and cardiac functions.

2. Was DPA (n-3) measured? If would be nice to see that included in Table 2.

3. Consider using DGLA instead of DHLA (seems to be the more common abbreviation.)

Major Compulsory Revisions

1. For the statistical analysis methods, please provide more details about the type of multiple regression analysis performed (e.g. stepwise, best subsets). Were any tests of collinearity amongst predictors evaluated? Were any non-linear associations evaluated? Were any model diagnostics evaluated (e.g. residuals vs. fits)?

2. The introduction/background section seems to focus specifically on EPA. Despite this relationship being a main finding of the study, it seems that the original investigational questions were broader. The measurements of cardiac function are not mentioned anywhere in the introduction. The introduction should be revised to reflect the study objectives and could include a hypothesis of what the authors anticipated would be the significant relationships (if appropriate), or a clarification that analyses were exploratory in nature.

3. The concluding statement of the abstract that EPA is a potential biomarker of cognitive function does not seem warranted by the study results. A more appropriate conclusion would be that the correlation potentially lends further support to a role of dietary n-3 in preventing cognitive decline in people with CAD.

4. In Tables 3 and 4, units are required for all continuous variables in order to interpret the beta coefficient. Please revise to include these.

Minor Essential Revisions

1. Abstract methods: mention other variables examined (e.g. BNP and LVEF).

2. Abstract results: provide R and p-value for each significant predictor.
3. Throughout the manuscript, change “single regression” to Pearson correlation (more accurate because you discuss R rather than R-squared.

4. Abstract conclusions: mention LVEF findings, too.

5. Background, first paragraph: instead of “Therefore, preventing dementia might lead to suppression of cardiovascular events,” mention the possibility of strategies that prevent both CAD and dementia.

6. Background, end of first paragraph: is identification of residual and conventional risk factors such as hypertension, diabetes, and smoking the objective of your study? These are reported in the results but not discussed.

7. Background, end of second paragraph: revise to say “serum levels of n-3 PUFA ‘may be’ risk factors for both…”

8. Methods: change “casual plasma glucose” to “non-fasting plasma glucose.”

9. Methods: change “Since n-6 PUFAs, including AA, are ‘known’ to be pro-inflammatory” to “Since n-6 PUFAs, including AA, are ‘often considered’ to be pro-inflammatory”

10. Statistical analysis: change log-transferred to “log transformed” and Pearson’s single regression to Pearson’s correlation.

11. Discussion: clarify for reader that dividing EPA by AA did not increase predictive power of EPA alone. AA seemed to have no relationship with MMSE, while low levels of EPA were independently correlated.

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.