Reviewer’s report

Title: Serum phospholipid fatty acids, dietary patterns and type 2 diabetes among urban Ghanaians

Version: 0 Date: 13 Jul 2017

Reviewer: Gina Segovia-Siapco

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Review of NUTJ-D-17-00171:

This paper aims to find an explanation for why a Ghanaian traditional eating pattern is associated with increased odds of T2D while a "purchase" pattern is inversely associated with T2D. The researchers aimed to investigate the role of FAs to these observed associations, specifically by characterizing the serum phospholipid FA profiles, analyzing association between dietary patterns and selected dietary FAs serving as markers, and investigating relationships of dietary FAs with blood lipids considered as intermediate risk factors for T2D. The original source of data for this report was a non-matched case-control study but data for only the controls were used.

Major concerns

1. It is not clear what period of time was covered in the FFQ and the intent in administering it. Was it to determine habitual intake in the remote past or the recent past?

2. Has the Ghana-specific FFQ been validated? How were the 51 food items in the FFQ collapsed into 33 food groups (and what were these food groups and how many foods in each group)?

3. Relative to the administration of the FFQ, when was blood drawn? How did you ascertain that food intake is reflected in the serum phospholipid FA composition?

4. The use of serum phospholipid as biomarker of fatty acid intake would be more applicable for short-term intake but may not necessarily be true for habitual intake which is more important for determining diet-disease relationships. Consider this as a possible limitation of your study.

5. In furthering the investigation to explain the previously reported associations between T2D and the dietary patterns formed out of the PCA on the
FFQ data, the researchers determined which serum phospholipid fatty acids was/were associated with biomarkers of T2D. However, no effort was made towards determining what fat-containing foods are determinants of the serum FAs. In the discussion section, allusion to possible foods in the dietary pattern that contributed to the serum fatty acid profile had been made despite this lack of information. I suggest that additional analysis on this matter be considered since the intent of the study was to determine why the dietary patterns are associated to T2D in an unexpected way.

Minor:

1. The objective of the study should be clearly stated and would be better if confined to the background section of the abstract.

Line 89 p. 6 -- frying is also a cooking method. . .

Line 92 p 5 - did you mean "contribution of serum FAs"? or dietary FAs? Please be specific. Kindly do the same for the rest of the paper when the abbrev "FA" or "FAs" is used to avoid confusion.

Lines 140-142 - there are 11 food categories listed but it is stated that there are 10.

Lines 187-189 - there seems to be a missing word in the sentence

Line 198 - box-cox should be Box-Cox

Line 224 - is "gross" the appropriate term?

Line 253 - are "fatty acids" also "dietary"? This section is a bit confusing if it is not specified whether the FAs refer to serum or dietary levels

Table 1 - misspelled "okra"

Table 4 - there is a "c" in C18:2n6

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