Reviewer's report

Title: Freeze-dried strawberry powder improves cardiovascular risk factors in obese women with metabolic syndrome: pre- and post intervention effects

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Reviewer: Diane L McKay

Reviewer's report:

1. Is the question posed by the authors new and well defined?
   Yes

2. Are the methods appropriate and well described, and are sufficient details provided to replicate the work?
   Yes.

3. Are the data sound and well controlled?
   No.

4. Does the manuscript adhere to the relevant standards for reporting and data deposition?
   No.

5. Are the discussion and conclusions well balanced and adequately supported by the data?
   No.

6. Do the title and abstract accurately convey what has been found?
   No.

7. Is the writing acceptable?
   No.

This is an uncontrolled intervention study in which levels of selected biomarkers of CVD risk were compared between baseline and end of study.

- Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

  1.) The hypothesis and outcome markers of interest are clearly stated under the Methods section (Objective). However, the authors must clearly state up front that this study is uncontrolled, and that comparisons are made between levels observed at baseline vs. those collected at the end of the study. A brief statement of the study goal should also be included in the Background section.

  2.) If the purpose of this study is to examine the effects of a strawberry drink on selected biomarkers in subjects with metabolic syndrome, it is unclear why the authors emphasize the tolerability and safety of this beverage (in the Conclusion
section) over its effects on CVD markers.

3.) There are several grammatical errors in this manuscript (too numerous to list individually). There are also several instances where sentence structure is confusing. For example, in the middle of the first paragraph of the Background section, the sentence beginning with “Keeping in view the critical role of oxidative stress…” is incoherent. Throughout the manuscript, the information is presented in sporadic bursts rather than in a logical progression. That is, there is no logical flow from one sentence to the next.

4.) Information presented in the Background section is overstated. For example, in the Background section (first paragraph) the authors mention a study conducted in rat smooth muscle cells. They suggest the results of this study show a decrease in the process of atherosclerosis. This is incorrect. Rather, the results of the study cited suggest a potential effect on the progression of atherosclerosis. One cannot follow the progression of atherosclerosis in cell culture studies.

5.) Information presented in the Discussion section is frequently overstated. For example, in the first paragraph of this section, the authors suggest this beverage made be used therapeutically to lower cholesterol levels in obese women. However, the degree of cholesterol-lowering observed after consuming this beverage for 4 wk is miniscule. Another example in that same paragraph is “Our study findings add to the scientific basis supporting the cardio protective role of dietary patterns….” This study did not test a dietary pattern, and should in no way imply that it did.

Furthermore, in the third paragraph, the sentence beginning with “Thus, oxidative stress…can be significantly decreased by dietary intervention with antioxidant-rich freeze-dried fruit powders…” overstates their findings. This study measured only lipid peroxidation in women who consumed a strawberry beverage.

In the following paragraph, the authors state that “it may be reasonably stated that the improvements in CVD risk factors were due to the strawberry powder…” As there was no control group in this study, the authors cannot accurately state that the effects were due to beverage alone – it is just as likely they were due to chance.

6.) Some of the limitations of this study are stated in the fourth paragraph of the Discussion section. However, the authors neglect to mention the biggest limitation of all – lack of an appropriate control group.

7.) In the last paragraph of the Discussion section, the authors suggest the need for a future long-term study with a larger population. However, the next step from here is to conduct an RCT, including a well-defined population of adequate sample size.

8.) The study design did not test for any potential mechanisms of action. While other studies that have explored potential mechanisms are mentioned, an
extensive discussion of these mechanisms in the context of this study is inappropriate.

9.) With regard to methods, describe why berries, green tea, cocoa, and soy products were the only foods excluded during the intervention. Justify why other foods high in ellagitannins, such as walnuts, were not excluded.

10.) Subjects were required to visit their center quite frequently (3 d/wk). Were any interim measures collected? If so, why weren’t they reported?

11.) Describe the method for measuring blood pressure in these subjects.

12.) Was this human intervention trial registered with clinicaltrials.gov or a similar entity?

13.) How was compliance measured on days when subjects were not monitored?

14.) With regard to Table 1, values should be listed per 50 g of powder, the dose given to subjects.

15.) Why are pre-intervention glucose and triglyceride levels normal in these metabolic syndrome patients? (Table 2)

16.) The ellagic acid levels reported in Table 2 are very low. Please state the lower limit of detection for the assay used to assess ellagic acid in this study. It should not be assumed that a non-detectable level is equivalent to 0.

- Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1.) In the title, one cannot have pre-intervention effects. Please edit for accuracy.

2.) In Table 2, values of hsCRP should be expressed as mg/L

3.) Please correct reference 18 in the References section.

- Discretionary Revisions (which are recommendations for improvement but which the author can choose to ignore)

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Not suitable for publication unless extensively edited

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