Author's response to reviews

Title: No effect of 14 day consumption of whole grain diet compared to refined grain diet on antioxidant measures in healthy, young subjects

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Author's response to reviews: see over
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To the editor,

We are pleased to submit to our revised manuscript now entitled "No effect of 14 day consumption of whole grain diet compared to refined grain diet on antioxidant measures in healthy, young subjects."

We appreciate the work of the reviewers and have revised the manuscript as they suggest. The specific responses to the reviews are attached.

Thank you for considering our work for publication in Nutrition Journal.

Sincerely,

Joanne L. Slavin, PhD
Professor
Response to reviewers

Reviewer #1

1. More information on the whole grain and refined grain foods is now given in the manuscript. We chose not to list brand names, but have included details on the products used in the intervention. The women subjects consumed 6 servings of grains per day while the men consumed 8 servings of grains. Most of the grain choices were whole grain cereals and whole wheat bread. The whole grain cereals did provide 51% of whole grain by weight. None of the other whole grain foods fit this definition since even 100% whole wheat bread does not fit these criteria. In all cases, efforts were made to choose the product highest in whole grains in each category. When the study was conducted, there were no labels on whole grain content of the foods so we are unable to calculate the exact amount of whole grains eaten by each subject, just that they ate the required number of whole grain or refined grain servings during the intervention.

2. We had no data on how long to feed to measure antioxidant measures in blood or urine. Many acute studies of antioxidants have been conducted and changes in antioxidant measures can be seen quickly. We chose to feed each treatment for 14 days to give subjects time to adjust to the dietary treatments. Consuming the diets longer than this would have seriously hurt subject compliance.

3. We pooled the samples on the last 2 days of each feeding samples as that was the usual protocol for measurement of isoprostanes.

4. It would be difficult to convince human subjects to consume higher amounts of whole grains than were fed in this study. We had no preliminary data to help calculate sample size, so it is possible that we were underpowered to see changes in ORAC or urinary isoprostanes.

5. Reference #21 has been corrected.

Reviewer #2

Major comments

Design
The amount of whole grain fed, 8 servings per day in men and 6 servings in women, made this a very difficult protocol to adhere to. We based our design on the assumption that 14 days of consumption of the dietary intervention would alter antioxidant measures. ORAC values have been found to change with acute intakes of foods high in antioxidants; less is known on isoprostanes levels, although studies have found differences within 10 days.

So our question is “does consumption of whole grains or refined grains over 14 days alter antioxidant measures – we chose not to have a washout because we felt that 14 days of intake would allow subjects to get to a steady state. Lipid studies often suggest that it takes up to 3 weeks to see changes in serum lipids, so it is possible that 14 days is not enough. But because of the difficulty of the intervention for the subjects, I don’t think we would have had good compliance with a longer treatment period.
More information on the diet records is now included. We have moved the methods used for diet analysis into the methods section as suggested.

Specific line suggestions:

4. title has been changed
53-54: US is now included
93: we purposefully chose not to have a washout period since we wanted to compare the effects of 14 day consumption of whole grains to refined grains. As the subjects needed to incorporate those grains servings into their usual diet, it made sense to us to keep them on the protocol and just switch them to the other treatment on day 15.
96: 6 servings for women, 8 servings for men – a serving is one slice of bread, ½ c cereal, 1 cookie, There continues to be much discussion of what constitutes a serving of whole grain – so in this study, we picked common foods that were as different as possible in whole grain content.
99: more information on the commercial wholegrain products is now included. We did not want to list the commercial names, but have given descriptions of the products
100: Compliance was checked with the diet records, to make sure they listed their required grain servings. Compliance was also checked by them returning all unused product after each intervention period.
102: More information on the food record is now described in the methods
204: The section on lipoprotein levels has been edited as suggested.
213: Our biostatistician would like us to stick with SEM, rather than SD. He feels that the methods chosen are appropriate, since our question is are their differences between the whole grain diet and the refined grain diet, as measured by biomarkers collected on days 13 and 14 of each treatment.
219: the diet record was estimated, not weighed and this has been clarified. Subjects were not consuming dietary supplements and this has been listed in the methods. More information about when the diet records were collected, one weekend day and 2 weekdays, is not included.
282: data on serum cholesterol not included

Tables 1 – 4

We mean diet treatment – so these data were calculated from the diet records from each treatment. Men subjects consumed 8 servings of grains per day and women consumed 6 servings.

Line 28 and line 50 – corrected
Line 43 – antioxidant measures will be used consistently
Line 74 – this has been changed
Line 247-279 – it is correct that we don’t have baseline data – just measures after consuming 2 diets for 14 days. We have attempted to clarify this as suggested

Tables and Figures – kJ figures are incorrect and have been corrected

We would like to leave the tables as they are – otherwise we have very long, skinny tables. But we can change if the current layout is confusing
32: We have changed to dietary intervention study rather than feeding study
68: changed
81: changed
315,339 – changed