Author's response to reviews

Title: Effects of high-protein vs. high-fat snacks on appetite control, satiety, and eating initiation in healthy women

Authors:

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Author's response to reviews: see over
Nutrition Journal: MS: 1929979876138327 “Effects of higher protein vs. higher fat snacks on appetite control satiety and eating initiation in healthy women”
Laura C Ortinau Heather A Hoertel Steve M Douglas and Heather J Leidy

We appreciate the time spent in reviewing this manuscript and providing very helpful comments and suggestions. We have highlighted all the text in the manuscript that has been revised. Our specific responses to each comment by the reviewers are included below.

Reviewer #1:

MAJOR COMPULSORY REVISIONS: NONE

MINOR ESSENTIAL REVISIONS:

Reviewer Comment:
1) Need to standardize the way "high-fat" or "highfat" is written through the abstract and article. Either with a hyphen or without. Should also apply this rule to "high-protein" or "higher-protein" throughout the manuscript. It is currently written both ways.

Authors’ Response:
We apologize for the lack of consistency and have revised these terms (to include a ‘-‘) throughout the abstract and manuscript.

Reviewer Comment:
2) The high-protein yogurt was the highest protein snack, but it is not mentioned that it is also the highest carbohydrate snack. This may be a factor in how it affects satiety....especially since the carbohydrates in the yogurt may have different satiety effects than the carbohydrate in the crackers. Might want to mention this somewhere...maybe as a study limitation.

Authors’ Response:
Due to space limitations of this Short Report, we combined the carbohydrate and fatty acid composition issue discussed in Reviewer Comment #3 below. Please see highlighted sentences within the Discussion.

Reviewer Comment:
3) In the discussion, you mention the effects of carbohydrate quality/simple sugar quantity on satiety. You did not mention if there were also different types of fats (triglycerides and fatty acids) in the chocolate and crackers which might be of equal importance.

Authors’ Response:
We appreciate the comment and have added several sentences in the Discussion to address the satiety differences with fatty acid composition.
DISCRETIONARY REVISIONS:

Reviewer Comment:
4) The "higher-protein yogurt" should probably just be called the "high-protein yogurt" since it is not being compared to any lower protein yogurt in this study.

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
5) The term "healthier snack" is used throughout the manuscript, but this is a rather ambiguous and subjective term and might be better replaced with the more objective term such as "nutrient-dense snack" or "higher-protein" snack.

Authors’ Response:
We have revised to low energy dense, ‘high-protein’ snack throughout the paper—except for one introductory sentence in the introduction which we subsequently expand upon/define.

Reviewer Comment:
6) In the first sentence of the background, you should give a location when discussing the "increase in number of eating occasion and rise in obesity." Mention if this is in the US or globally. Also, same thing goes for the third sentence in the background paragraph, mention if "Nearly one third of daily intake........" is a statistics for the US or worldwide.

Authors’ Response:
We appreciate the need for clarification and have revised accordingly.

Reviewer Comment:
7) Sentences in the methods such as "In general, the yogurt was higher in protein and low in fat, whereas the crackers and chocolate were lower in protein and high in fat" would read better if you used consistent/similar terms throughout; such as "high" and "low" instead of "higher" and "low".

Authors’ Response:
We agree and have revised accordingly.

Reviewer Comment:
8) Might want to explain why exactly 236 mL of water was given. If this was mentioned in a previous protocol, then that should be referenced or explained.

Authors’ Response:
The 236 ml quantity is simply 8 oz, which is a typical volume of water to consume with a snack. We have included the ‘8 oz’ amount within the text.
Reviewer Comment:
9) Might want to give the calorie and macronutrient breakdown of the pizza pockets they were served. The calorie/nutrient content of the dinner may have effects on how much was consumed.

Authors’ Response:
The calorie and nutrient content have been included.

Reviewer Comment:
10) In the conclusion of the abstract, you should mention what is being compared to the yogurt. (i.e. "when compared to lower-protein, higher-fat snacks")

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
11) In the results section, when mentioning "hunger AUC", you might want to instead write "perceived hunger AUC" to be more technically accurate.

Authors’ Response:
We have included the term ‘perceived’ at the beginning of the paragraph to indicate what hunger measure we have incorporated.

Reviewer Comment:
12) The acronym CHO was introduced in the abstract and discussion, but it was never properly introduced as carbohydrate (CHO).

Authors’ Response:
We have removed the acronym throughout the paper.

Reviewer Comment:
13) In Figure 1, the lettering system is a little confusing since the lowercase letters "a" and "b" are used twice and mean different things. First they are used to denote perceived hunger (a), and fullness (b) in the line graphs; and then they are also used to denote significance in the neighboring bar graphs. May be best to use either capital letters, different letters or symbols to denote one or the other.

Authors’ Response:
We have revised to use capital letters for the headings.

Reviewer Comment:
14) Might also want to note if there was any significance or not at any given time point (i.e. 90 min or 120 min for hunger, 90 min for fullness) in either of the graphs in Figure 1. There looks
to be some possible significant differences at 90 min between yogurt and chocolate. The post-snack fullness AUC for chocolate also appears to be an interesting talking point since it was near zero....apparently having very little effect on fullness for a high-fat, moderate carbohydrate snack.

Authors’ Response:
The 90 min hunger and fullness snack comparisons were included and discussed.

Reviewer #2:

GENERAL CONCERN

Reviewer Comment:
I was surprised that the authors did not consider energy density of the three snacks under investigation has an important factor that could explain the result. It is well known that low energy dense preload can enhance satiety and reduce subsequent energy intake at a meal (Rolls, Physiol and Behav, 2009). When looking at table 1, we could guess that the yogurt snack has a lower energy density than the two other snacks. Is it possible that energy density could explain the results? In my opinion, energy density should be included in the introduction, present in table 1 and considered in the last part of the article (discussion).

Authors’ Response:
We appreciate the comment as this was indeed a large omission on our part. We are well acquainted with the energy density research and agree that this important dietary factor was a significant contributor to the study findings. We have thus revised the manuscript to include energy density within the comparisons as well as throughout the Introduction and Discussion sections.

MINOR COMMENTS:

Reviewer Comment:
Page 3, line 4 : Please specify : In the US population, nearly one third of daily....

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
Page 3 : Can you specify why this study was done only in women? Usually, this type of studies are easier to complete in men has women menstruation cycle can influence appetite sensations and food intake (Dye and Blundell, Hum Repro,1997). This is probably not an issue because of the randomized design. However, information about menstruation cycle should be provided.
Authors’ Response:
We sought to examine the effects of commonly consumed snacks in a group of people who habitually snack. Because women snack more frequently than men (Forslund B, et al., 2005l Int J Obes; 29(6): 711-719), we chose this group to complete our initial examination. All women in the study were pre-menopausal. However, in order to test the various snack patterns over a shorter-time frame, we chose not to test during a specific phase of the menstrual cycle, (e.g., follicular phase). We acknowledge that menstrual phase can influence appetite and food intake. However, we also support that other, perhaps more significant confounders arise (e.g., change in physical activity patterns, weight gain, etc.) when acute, cross-over studies extend over the course of several months instead of several weeks. Thus, we chose to complete all testing days within a single month. Unfortunately, we did not document menstrual cycle phase and cannot include this in the manuscript. We have, however, included that these were pre-menopausal women.

Reviewer Comment:
Page 4 : Please specify whether participants had to refrain from intense physical activity the day before experiment ? If not, this should consider as a study limit.

Authors’ Response:
Since the snack-specific testing began in the afternoon, we asked the participants to refrain from intense physical activity the day of testing. However, they were permitted to exercise the day prior to testing. We asked the participants to replicate their activity patterns prior to each testing day; thus, we are confident that the within-subject, randomized cross-over design reduced the potential confounder of activity.

Reviewer Comment:
Page 4. : Specify if the participants were aware about the real study objectives.

Authors’ Response:
The participants were aware of the study objectives to examine the effects of different snacks on afternoon appetite. This has been included.

Reviewer Comment:
Page 4, line 18 : Correct : « visual analogue scale on appetite sensations » and specify the length of the scale (100 or 150 mm).

Authors’ Response:
This has been revised accordingly.

Reviewer Comment:
Page 4 : Provide more information about breakfast and dinner composition.

Authors’ Response:
We have included the composition of the breakfast, dinner, and lunch meals.
Reviewer Comment:
Page 4: Please specify if the participants were allowed to drink during breakfast or dinner or between meals.

Authors’ Response:
We have included this information.

Reviewer Comment:
Page 5: The author observed that yogurt led to greater reductions in afternoon hunger compared to chocolate. Based on this observation we would expect that yogurt would reduce more food intake compared to chocolate. But then on page 6, the author indicates that the consumption led to approximately 100 kcal less at dinner compared to crackers. Why chocolate and not crackers? How can we explain these different results? Impact of sweet and savoury food on appetite sensations should be discussed.

Authors’ Response:
As per the request of Reviewer #1, we have included the snack comparisons of hunger and fullness at 90 min. During this time period, the yogurt snack elicited a reduced hunger response compared to both high-fat snacks—which is in-line with the increased dinner intake of both high-fat snacks vs. the yogurt. The lack of difference in hunger AUC between the yogurt vs. crackers is likely attributed to the slightly larger variability in response following the consumption of the crackers (as shown from the error bars in Figure 1A) and likely not from the sensory properties of the foods (i.e., sweet and savory), particularly since the overall liking of the snacks was similar. Although we appreciate the recommendation to include this concept within the paper, the space limitations for this Short Report do not allow us to do so without removing other key aspects.

Reviewer Comment:
Page 6, line 12: Specify: “...and reduces short-term food intake....”

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
Page 6, line 16: Need references after the sentence: “Several previous snack studies....”

Authors’ Response:
These have been added.

Reviewer Comment:
Page 7, line 6: “This inconsistent finding...” specify which findings.
Authors’ Response:
This has been added.

Reviewer Comment:
Page 7: The authors indicate that complex CHO reduce appetite and increase satiety more than simple CHO. This is not always the case. Other studies indicate that some complex CHO with high glycemic index have lower impact on appetite sensations than simple CHO (with lower glycemic index. This should be rephrased/modified.

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
Page 7: correct “reduce appetite “ for “reduce hunger”

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
Table 1 - Add energy density of each snack

Authors’ Response:
This has been added.

Reviewer Comment:
Table 1 - Please indicate kcal also in kJ

Authors’ Response:
kJ has been added

Reviewer #3:

MAJOR COMPULSORY REVISIONS: NONE

MINOR ESSENTIAL REVISIONS:

Reviewer Comment:
The background is very brief and requires more information. The opening paragraph could then be followed by a paragraph describing research that has examined the impact of snack composition on appetite control. The authors could also emphasize the effects that protein intake has on appetite. Adding this information will make the background to this study clearer for the reader.
Authors’ Response:
We appreciate the comment and agree that extending the background would provide additional clarity. However, due to the space limitations of the Short Report, we are unable to substantially extend the Background. We have added several sentences with cited reviews regarding the effects of increased dietary protein on satiety, etc.

Reviewer Comment:
The discussion should include a limitations section. The limitations should include reference to the absence of hormone measures in the present study. The authors offer only one broad suggestion for future research in the discussion. The authors should offer more potential research ideas for the future, including the study of overweight/obese men, women and children.

Authors’ Response:
We have included a limitations section and have added more future directions, etc.

Reviewer Comment:
Abstract - Paragraph 1: “nutrient poor high fat snacks.” Should be “high-fat”

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
Methods - Paragraph 3: Where volunteers excluded if they were taking certain types of medication?

Authors’ Response:
The participants were not on medication that would alter appetite. This has been added.

Reviewer Comment:
Methods - Paragraph 4: How were the participants acclimated to the different snacks?

Authors’ Response:
We have revised to include this information.

Reviewer Comment:
Methods - Paragraph 4: Volunteers were given 236ml of water with their snack. This is very specific. Why this exact volume?

Authors’ Response:
The 236 ml quantity is simply 8 oz, which is a typical volume of water to consume with a snack. We have included the ‘8 oz’ amount within the text.
**Reviewer Comment:**
Methods- Paragraph 4: Volunteers were offered pizza pockets for dinner. Were volunteers asked before their participation in the study if they liked pizza pockets?

**Authors’ Response:**
Yes, during the information session, prior to signing the consent form, the participants were informed of what the dinner meal would consist of. If they did not like pizza pockets, they did not sign the consent form (and refrained from participating in the study).

**Reviewer Comment:**
Methods- Paragraph 5: Remove the statement regarding statistical trends. It is not necessary to state this.

**Authors’ Response:**
This has been removed.

**Reviewer Comment:**
Results - Paragraph 6: “and increases in fullness...” insert a comma after “fullness“ to break up the sentence.

**Authors’ Response:**
We have revised accordingly.

**Reviewer Comment:**
Discussion - Paragraph 10&11: The authors should consider merging these two paragraphs to help the flow of the discussion.

**Authors’ Response:**
As per the recommendations of Reviewer #2, we have included additional information within paragraph 10 and now it seems appropriate to keep it as a separate paragraph.

**Reviewer Comment:**
Discussion - Paragraph 11: “Additionally, eating initiation...” replace “Additionally” with “However”.

**Authors’ Response:**
We have revised accordingly.

**Reviewer Comment:**
Discussion - Paragraph 11: When referring to previous studies, the authors should state what populations these studies examined, i.e. men/women, lean/overweight?

**Authors’ Response:**
This information has been added.
Reviewer Comment:
Conclusion - Break the concluding sentence into two sentences. Replace the comma after “specifically high-fat crackers and chocolate,” with a full stop. “suggesting that a nutrient-rich,” replace “suggesting” with “This finding suggests” to begin a new sentence.

Authors’ Response:
We have revised accordingly.

Reviewer Comment:
Figure 1&2 - Legends should be underneath figures.

Authors’ Response:
To our knowledge, the Nutrition Journal will make all editorial adjustments in terms of legend placement, etc. at the time of publication.