Reviewer's report

Title: Effect of Consumption of micronutrient enriched wheat steamed bread on postprandial plasma glucose in healthy and type 2 diabetic subjects

Version: 3 Date: 13 April 2013

Reviewer: Anne Nilsson

Reviewer's report:

The manuscript has been improved, but there are still several issues that must be addressed.

- Major Compulsory Revisions

Background:
1. Reference no 1 is not a reference to what is stated in the text. A new ref has to be inserted.
2. Reference no 3 is not a suitable reference in this paper.
3. The information “Carbohydrates consists of……..” should be removed, the information is to basic.
4. Next sentence “Fibers are not…..” doesn’t add information important to the manuscript, and can be removed.
5. The definition of GI should be presented when GI first is mentioned.
6. Described the ratio to include Chu 20 and the mixture of (commercial??) white wheat in the study matrix.
7. It is stated that the postprandial glucose responses were followed in 10 diabetic persons, but only one postprandial value (120 min) was determined. Why is that? You have stated and refereed to that the postprandial response may be very important. This must be clarified.
8. Explain the rationale for including buckwheat.

Materials and methods:

Raw materials:
9. Move the description of effects of buckwheat to the background.
10. Was all the grains treated similar (removal of 15% of the bran)? Clarify.

Subjects:
11. What is meant by “were not in the menstrual cycle”? Clarify.
12. The abbreviation “T2DM” is not defined previously.
13. You stated in the background that the subjects were not overweight, but the inclusion criteria was BMI</=28, were there overweight subjects included, i.e. BMI>25. Clarify.
14. Did the participants with metmorfin treatment continue with their habitual medication during the whole intervention? Describe.

Study design:
Test of glycaemia response of healthy subjects:
15. Reference no 19 is missing.
16. Describe more exact at which time point they were provided breakfast (e.g. at 8.00).
17. Was the order of test and reference meal randomly chosen?
18. Description of what GI is and how it is calculated doesn’t suit in this section. The calculation can be mentioned in the section describing statistical calculations.
19. The fact that the subjects were allowed to consume water during the test period can have affected the glucose response. Was this intake standardized with respect to amounts and time point? This should be mentioned as a limitation in the discussion section.

Plasma glucose determination of diabetics:
20. What is meant with “each subject was served 250 ml of drinking water at the same time? All 10 at the same time, or each subject at the same time at each occasion? Clarify.
21. When (at which time point) did the test started?
22. Again, why was not postprandial measurement conducted in these subjects? That must be mentioned and explained.
23. Last in this section; weren’t the test products randomly consumed? If not why? If not, this is a big study limitation, and it has to be discussed in the discussion section. Was a mean of the 3 repetition determined and used in the calculations. Describe the method more in detailed.

Analytical methods of blood samples
24. Was the blood tubes centrifuged, plasma separated and stored in a freezer (-? #C), describe the methods more thoroughly.

Chemical analysis of the test products
25. Please insert a reference to the method used for determination of starch and fat contents in the test products.

Statistical analyses
26. The glucose areas are used in the statistical evaluation, describe how the glucose areas were calculated, and which program was used for graph plotting.

Results
Postprandial plasma glucose responses of healthy subjects:
27. The third row: insert p>0.05 which indicates that there were no statistical differences.
28. The sentence: Statistical analysis indicate that the levels of……were significantly lower than any ….at all test points. How is this determined? Are all test points analyzed separately? This can be done if there are time*treatment interactions. If the results only reveal main effects there is no reason to analyze differences at each time point.

29. Table 2 in the text should be table 3.

30. Have you defined iAUC previously (and how it is calculated)? Describe.

31. Table 3: declare the unit used for iAUC.

Postprandial plasma glucose responses of diabetic subjects:

32. The first row state “A similar test was…” this is not true because the postprandial period was not followed by repeated blood glucose measurements, (change also in the head line). Post prandial glucose determinations had been most relevant, and I can’t understand why this is omitted. It must, at least, be stated as a study limitation in the discussion.

33. State that also buckwheat resulted in significantly lower 2h glucose concentrations.

34. In the text “The average value of……in different foods”. State which figure belongs to which food.

35. Insert p-values (p<0.05) when significant.

36. The text “It is therefore concluded that…..” Don’t make conclusions in the results section, leave that to the discussion. It is also unclear what is meant with this sentence.

Discussion:

37. It is stated that whole grain reduce the risk of diabetes, and that is correct. However it is known that whole grain food not necessarily may reduce the GI (depends on what type of whole grain, but it is more a matter of the structure of the whole grain food, e.g. intact kernels vs. flour). The beneficial effects of whole grain depend on other mechanisms, probably colonic fermentation and/or contents of micronutrients are involved. The references no. 12-13 is not correct when you refer to that whole grain may lower GI. These studies are not intervention studies, but epidemiological studies.

38. What is the difference between traditional and classic baguette? describe

39. Reference 28 can be omitted.

40. I can’t see what you want to state when you first write that “processing and fermentation of steamed bread is different from that of the bread”, and then you state that previous studies have shown that the GI is high in these breads. What do you want to describe? Clarify.

41. “Behall et al. reported that THE GI OF high amylose ……lower than the GI OF the high amylopectin crackers.”

42. How is the percentage amylose calculated (31%)?. From the table 3 it seems like almost half of the starch content is amylose. Check that the calculation is
It is stated in the discussion that the amylose in most wheat cultivars in China is between 16-32% (don't use decimals), why are you then referring Jizi439 to be a high amylose variety (31% is within the normal range as is described in the discussion)? Clarify.

The statement that chromium is important in regulating metabolism is not supported by reference no. 26, and should therefore not be inserted here.

3 sentences below the above, similar to above; ref no 16 does not support the statements in the text.

The description of beneficial effects of chromium is poorly discussed in a context of high amounts of chromium in the Jizi439 bread. In the discussion about the effects of cr you should describe the bread as being high in cr.

In the text it is stated that “This wheat variety offered medicinal as well as nutritional values, which made it an ideal food source to prevent diabetes, cardiovascular diseases and enhancing immunity. The major problem with this statement is the interpretation of the findings which should be better calibrated on the results obtained.

a. This is NOT a medication; this is food.

b. No inflammatory variables have been determined, meaning that you can’t say anything about enhancing of the immunity.

c. This food product has a GI of 75, which means that the bread is a high-GI product.

Discuss why not postprandial glucose concentrations were determined in the type 2 diabetic group.

In type 2 diabetic persons you actually don’t have any data regarding the glucose response; except the 2h concentrations, making it impossible to talk about glucose response.

It is not correct to state that Jizi439 bread is an ideal food source for diabetic persons when it is a high-GI product. However, it seems to be preferable compared with ordinary wheat bread.

2-h plasma glucose. Add to the information that it is the value at 2h after the OGTT.

Table 2:

2-h plasma glucose. Add to the information that it is the value at 2h after the OGTT.

Table 3 and figure 1:

Insert the unit for iAUC.

Is the GI calculations done correctly? Looking at figure 1, the mean incremental glucose areas are much smaller for Jizi and chu compared with the mean incremental glucose values after the glucose solution, but the GI of Jizi is high. I am aware of that GI is calculated based on individual ratios, but looking at
the mean iarea for Jizi, it is extremely small.

54. Is it incremental areas, as is stated, or is it AUC that is reported? One reason for this question is that the differences in iareas when looking at the curves seems to be larger than what is reported.

Figure 2 and 3:
55. The Y-axel title should include that it is the 2h delta values that are reported.

- Minor Essential Revisions

1. In the background text: “Several studies have evaluated the glycemic response….. 88.1-98.3”. Don’t present decimal values with GI values.

2. The objective described: “objective was to find the best bread….” Delete the text “the best bread” from the text.

3. In the last section in the Subject section there is a repetition of above regarding the OGTT, this should be removed.

Study design:
Test of glycaemia response of healthy subjects:
4. It is not necessary to describe what fasting is.

5. To many references (ref 20-23).

Plasma glucose determination of diabetics:
6. There is an unnecessary repetition of the test products.

Results
Postprandial plasma glucose responses of healthy subjects:
7. The text: "it indicated that ……from 15 min to 120 min…." is a repetition and can be deleted.

Postprandial plasma glucose responses of diabetic subjects:
1. There is a repetition of the results regarding Jizi439 (significantly lower than mixture wheat).

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

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:
I declare that I have no competing interests