Reviewer’s report

Title: Sweet taste sensitivity in pre-diabetics, diabetics and normoglycemic controls: a comparative cross sectional study.

Version: 2 Date: 25 June 2014

Reviewer: M. Yanina Pepino

Reviewer’s report:

RE: Manuscript “Sweet taste sensitivity in pre-diabetics, diabetics and normoglycemic controls: a comparative cross sectional study”

This manuscript report the findings of a carefully conducted study examining sweet taste sensitivity in adult people who, based on their glycated haemoglobin, were classified in three groups: pre-diabetes, diabetes and normoglycemic. The primary hypothesis under study was that compared with normoglycemic, subjects with pre-diabetes would have a blunted sweet taste sensitivity. The primary finding of this study is that subjects with diabetes have significantly higher sucrose detection thresholds and a blunted perception of suprathreshold sucrose concentration than normoglycemic subjects, with subjects with pre-diabetes having intermediate values, no significantly different from the two groups. Authors conclude that “This taste abnormality in pre-diabetes may adversely influence the sugar consumption driving them overt diabetes”.

I have some comments, questions and suggestions.

Major compulsory revisions:

1. The statistical analysis used for perception of sucrose at suprathreshold concentrations is not clear, but it seems to this reviewer it may not be the appropriate one. In the statistical analysis section, it is described that “analysis of co-variance” was performed, but there is no description of what variable was used as a covariate. Table 3 show results that analyze each concentration of sucrose independently. The most appropriate analysis for analyzing taste perception suprathreshold should be a mixed ANOVA with Groups (pre-diabetes, diabetes and normoglycemic) as between factors and Sucrose concentrations (the 4 concentrations) as within factor (i.e. intensity of sucrose concentrations should be evaluated as a repeated measure). Were the outcome variables (i.e. taste detection thresholds, recognition thresholds and values of intensity at suprathreshold concentration) normally distributed?

2. The conclusions are not supported by the data (at least as presented in this version of the manuscript; perhaps findings will change with new statistical analysis and then it may be the case that pre-diabetics are different than normoglycemics). The abstract is misleading as it seems that sweet taste sensitivity in pre-diabetics is “abnormal” when it is not. Conclusions and abstract should be edited accordingly.
3. Introduction should be revised to include references (none of the statements on the first paragraph have references) and correct some errors (see below)

a. I am not aware of studies that prove that the “principal determinant of taste thresholds is genetics”. With the exception of detection/recognition thresholds for PROP/PTC, I am not familiar with a body of studies supporting the statement. The reference used is not appropriate. Please include the correct references or edit the statement (perhaps it would be safer to say that taste thresholds are modified by multiple factors including genetics, age, smoking and so forth……).

b. On line 90 of the introduction, the authors interpret the existing association between increased taste thresholds and hyperglycemia as if there was a cause-effect: “Due to this blunted taste response, DM patients tend to consume more sugar compared to non-diabetics leading to further deterioration of their glycemic control”. Associations do not imply causality, and it could also be the case that the opposite direction for the relationship is true. As it has been reported for other basic taste, namely salty taste, it may be that increase sugar (or sweetness if we include the consumption of non-caloric intense sweeteners) consumption cause a reduction in sweet taste sensitivity. Also, do indeed DM patients consume more sugar compared to non-diabetics? This statement needs a reference.

4. Were smokers included in the sample? Because smoking can affect taste perception, it would be important to describe the percentage of smokers in the different groups.

Minor essential revisions:

1. Please include how diabetes and pre-diabetes status was defined in the abstract

2. Please justify why the two most extreme sucrose concentrations (the lowest and the highest) were removed from the analysis. It looks as if this two points should be included in the repeated measure analysis (the factor sucrose concentrations should have 6, instead of 4, repeated measures).

3. The replacement of Table 3 for a graph may better convey the findings.

4. Please ask a native English speaker to proof read the manuscript. There are several sentences that need attention.

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

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests