Reviewer's report

**Title:** Indigestible carbohydrates in barley as modulator of glucose metabolism, perceived satiety and voluntary food intake over 16 h in healthy adults - implicating colonic fermentation and stimulation of glucagon-like peptide-1

**Version:** 1  **Date:** 4 December 2012

**Reviewer:** gabriele riccardi

**Reviewer's report:**

Major Compulsory Revisions

1) This is an interesting paper on the impact of the evening consumption of barley, as compared with white bread, (both were utilized in portions containing 50 g available carbohydrates) on blood glucose levels, satiety, food intake and hormonal profiles evaluated in the following day. The major problem with this study is the interpretation of the findings which should be better calibrated on the results obtained.

2) The title attributes to GLP1 the role of major player in explaining the beneficial metabolic impact of barley; this is largely speculative and, therefore, it should not be proposed as an outcome of the study both in the title and in the conclusions.

3) The test meal is based simply on the test or the control food rather than on a composite meal. This is a limitation of the study since the authors aimed at performing the metabolic evaluation during a “real life eating situation” . In the same line, it is unrealistic that they used a carbohydrate intake of only 50 g and that the meal was taken rather late, at 9,30 pm.

4) In the study design section it is stated that each evening meal was consumed twice; it is not clear what was the reason of this choice and how the results of the two tests were handled.

5) In the paragraph on blood glucose and serum insulin there is no mention of the insulin patterns on the day after the two test meals; according to table 6, they do not show any significant difference. It should also be mentioned that no significant difference in postprandial plasma glucose values was present after lunch; this is even more remarkable considering that the energy and, possibly, the amount of carbohydrates was lower for the lunch taken on the day after the BK meal. Possible reasons for the inconsistency of the results after breakfast and after lunch should be considered in the Discussion (is it due to the time elapsed after the test meal?). It might be appropriate to evaluate insulin sensitivity after breakfast and after lunch using indirect methods based on insulin and glucose after a carbohydrate challenge.

6) The ghrelin values are missing from the text and from the table; if they do not differ between the two test meals, this should be commented in the Discussion: usually ghrelin is a good objective marker of the subjective feeling of appetite while GLP1 is more relevant for satiety.
7) FFA plasma concentrations were measured only before the meals: why? In any case, it might be interesting to know whether any significant difference in plasma FFA was present between the two test meals before lunch.

8) In the Discussion gut microbiota activity is often mentioned as a possible explanation for the study finding; as a matter of fact no evaluation of bacterial activity is attempted in this study. Breath H2 is a marker of colonic carbohydrate fermentation rather than of bacterial activity.

9) The role of GLP1 in explaining the study findings is overemphasized; GLP1 is often associated with satiety more than with hunger. In this study while GLP1 levels clearly differ between the two test meals for the entire duration of the observation, no difference in satiety is recorded and food intake is different for BK as compared with WB at lunch but not at breakfast. The importance of GLP1 in relation to insulin sensitivity is documented for pharmacological levels of this hormone but not for physiological changes, as in this case. Other parameters able to influence appetite and insulin sensitivity were not measured throughout the day (i.e. FFA, Short Chain Fatty Acids).

10) Conclusions are not entirely based on data; the final paragraph of the Abstract gives a more appropriate interpretation of the study outcomes.

Discretionary Revisions

11) It is not clear why finger-prick capillary blood samples were utilized for blood glucose measurements while venous plasma was used for all other biochemical variables.

12) In the Results section I find more logical to have the paragraph on subjective appetite ratings soon before that on voluntary energy intake.

13) Fig 1 does not contribute any information not already in the text; therefore, it can be deleted.

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

no conflict of interests