Reviewer's report

Title: Insight in modulation of inflammation by gene, protein and metabolite profiling in mildly obese males: a human intervention study

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Reviewer: Yu Wang

Reviewer's report:

This study has used an integrative omics approach aiming to characterize biomarkers associated with the treatment with diclofenac, a non-steroidal anti-inflammatory drug. Sophisticated analyzing programs have been used to analyze the proteins, metabolites and gene expression changes. The following needs the attentions from the author in order to improve the presentations and interpretations of the paper.

• Discretionary Revisions
The details for proteomics analysis should be explained. Especially, detailed information on the identification and quantification of the 79 proteins should be included.

• Minor Essential Revisions
The paper is well written and carefully edited.

• Major Compulsory Revisions
The major concern is on the study design. First of all, although the focus of this investigation was on inflammatory changes related to diclofenac treatment, no proper inflammatory markers were measured and used as the reference for the study. The data should present how exactly the serum levels of the common inflammatory cytokines/adipokines were changed and whether samples from the drug treatment group indeed showed a decreased systemic inflammation. Second, CRP response was used for correcting factors in transcriptome, proteome and metabolome datasets. Since CRP is an inflammatory marker widely used for systemic inflammation, the obvious difference between the levels of this marker in two groups (at least two fold of the mean values) before the treatment somehow suggest a bias for the study design. Moreover, if the CRP was not changed by the drug but significantly decreased in placebo group, it should not be used in the study as a correcting factor. To justify all the subsequent omics study, therefore, other reliable inflammatory indicators should be evaluated in the first instance.

Level of interest: An article of limited interest

Quality of written English: Acceptable
Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests.