Reviewer’s report

Title: Elevated circulating irisin is associated with lower risk of insulin resistance: association and path analyses of obese Chinese adults

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Reviewer: Jonathan S Bogan

Reviewer's report:

The authors present a follow up study that expands on their previous two reports examining irisin in a large cohort of community-living obese Chinese adults. This cross-sectional analysis supports the idea that increased circulating irisin is correlated with lower insulin concentrations and reduced insulin resistance. The authors further used a structural equation modeling approach to arrive at a proposed pathway diagram linking irisin to insulin resistance, but not directly to adiposity or plasma glucose per se.

The analysis is reasonable, but a limitation is that assays of circulating irisin are not widely accepted as accurate or reproducible. The authors note in their previous report, published in PLoS One in 2014, that the intra and inter assay variations in their assays were both less than 10%. Thus, it may be that the methods used here are reliable, and the data fit well with the proposed role of irisin. Nonetheless, it would be appropriate to comment on the assay in this manuscript, and to acknowledge that this could be a limitation of the present study.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes
Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

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Please indicate the quality of language in the manuscript:

Acceptable

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