Reviewer's report

Title: The association of circulating irisin with metabolic risk factors in Chinese adults: a cross-sectional community-based study

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Reviewer: Hongting Zheng

Reviewer's report:

Tang et al. conducted a cross-sectional study to find the association between serum irisin levels and obesity in an elderly Chinese population. They found a significant lower irisin level in obese subjects compared with normal weight participants. Further correlation analysis showed that the serum irisin levels were negatively correlated with some obesity and insulin resistance-related indicators such as waist circumference, fasting insulin and HOMA-IR. Moreover, the authors also conducted linear and logistic regression to further confirmed the correlation between irisin and obesity. The study is interesting and designed in an appropriate fashion. Still, there are some major points which have to be addressed.

Major revision:

1. Table 2, please show data on Pearson's correlation after adjustment for age and sex.

2. Table 3, multiple linear regression analysis should better look for determinants of a decreased irisin concentrations, not for a "correlation" with HOMA-IR. It is better to set the irisin levels as the dependent variable, and other parameters which might be the explanatory variable(s) for irisin should be set as the independent variable(s). Note: it does not make sense to add potential determinants that are tightly associated with HOMA-IR (like parameters indicating fasting insulin and fasting glucose) in the same analysis, because that may cancel the association with HOMA-IR. Thus, such pathophysiological factors should be analyzed in a separate analysis.

3. Further, the approach to multi-factorial regression analysis is questionable: It is not common to include parameters in a multiple regression analysis that have not been nearly (p < 0.10) significant in univariate linear regression analyses. I recommend that this be redone with the present data set.

Minor revision:

1. Spaces should be inserted before and after a mathematical symbol.

2. Some statistical symbols should be italic, please refer to the author's instruction of this journal.
3. Page 5 line 10 "coded as 1" is redundant.

4. Table 1, P-value, some "0" before the decimal point were omitted, please unify the format or refer to the author's instruction.

5. The manuscript should be revised by a native English speaker familiar with medical terminology.

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

No

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

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