Reviewer's report

Title: The obesity-risk variant of FTO is inversely related with the cautious, low-appetite, and slim "So-Eum" constitutional type: Genome-wide association and replication analyses

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Reviewer: Yufang Pei

Reviewer's report:

Sasang constitutional (SC) medicine categorizes human beings into four types (TE, SE, SY and TY). In this study, Cha et al. defined SC types on the basis of tertiles of SCAT probability values and performed GWA analysis and followed replication analysis for three SC types (TE, SE and SY). They found that the obesity-risk variants of FTO were inversely related with the SE type. The results are interesting. I have several comments:

- Major Compulsory Revisions

1. What is the correlation between different SC types? Is there any overlap between any two different SC types?

2. The authors only performed association analysis for the genotyped SNPs in this study. Genotype imputation with the 1000 Genomes reference panels can infer the genotypes at untyped loci. The imputation algorithm should be used, at least for the FTO gene.

3. The authors did not describe what kind of random-effects model they used and they did not report the results for heterogeneity test. More details should be provided by the authors.

4. The authors performed association analyses for three SC types. And thus the genome-wide significance at the Bonferroni-corrected level should be 0.05/311944/3.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

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

Declaration of competing interests:

I declare that I have no competing interests' below.