Reviewer's report

Title: Nutrition assessment of Vitamin A and Vitamin D in northeast Chinese population based on SPE/UPLC/PDA

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Reviewer: Yuan Lin

Reviewer's report:

Wang et al. aimed to establish a reliable method for simultaneous determination of serum 25OHD3 and retinol, and assess the nutritional status of VA and VD among northern Chinese population. In the current study, they established a new method, SPE/UPLC/PDA, which could simultaneously detect the serum levels of 25OHD3 and retinol. And using this new method, they tested serum VA and VD levels among elementary school students, middle school students and adults in Harbin. They found VD deficiency was common with the prevalence > 60% in all three age groups and the high prevalence of VA deficiency was only observed in the elementary school students. According to the authors, this method could spontaneously measure serum VA and VD levels with good precisions, and could process 100 samples within 12 hours. Several concerns need to be addressed while it is considered for publication:

1. The biggest concern I have is how to approve the new method is reliable. I would suggest to randomly select participants from each group and used traditional method, e.g., HPLC/MS to measure the serum concentration of VA and VD and further compare them with the VA/VD concentrations tested by the new SPE/UPLC/PDA method.

2. The new method developed in this study is the combination of SPE, UPLC and PDA. There might be not such combined method before, but I am wondering if the authors could provide evidence that these methods have been used before to test VA and VD or something else similar and showed reliable and accurate performance.

3. Is there any published data on the prevalence of serum VA and VD in Harbin city? If so, is the probabilities of deficiency comparable to what was showed in this study?

4. One typo on page 7 line 161, "…. 307 elementary school students were included in current students" should be edited to "the current study", right?

5. In the abstract, all abbreviations, e.g., VA,VD, SPE, if were used for the first time, should be given the full terms.
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.

Unable to assess

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

No

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.

I am able to assess the statistics

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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