Reviewer's report

Title: Is dietary zinc protective for Type 2 diabetes? Results from the Australian Longitudinal Study on Women’s Health

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Reviewer: Stephen Myers

Reviewer's report:

The manuscript “Is dietary zinc protective for Type 2 Diabetes? Results from the Australian Longitudinal Study on Women’s Health” by Vashum et al. describe findings that suggest that a higher total dietary zinc intake and a high zinc/iron ratio is associated with a lower risk of type 2 diabetes in women.

Major compulsory revisions

The manuscript was well written and addresses an important issue, type 2 diabetes. Both the title and the abstract accurately convey the work presented and summarize effectively the research findings. The reference material is appropriate however, in addition to many studies implicating dietary zinc in glycaemic control in both animal models and humans, there is also equally many studies that have found the converse. I feel that these studies were not captured in the discussion and should be discussed in light of the current findings here. Although I think this study has benefit, it is difficult to conclude definitively that a higher dietary zinc/iron ratio was associated with a lower risk of type 2 diabetes in women. For example, confounding factors may include; where the food was grown and the different zinc levels in soils, zinc in cosmetics, zinc in drinking water (approximately < 3 mg/L but can be much higher as a result of corrosion from zinc-coated pipes and galvanized rain water tanks).

In its current form, the manuscript should identify these limitations in the study design and address other confounding factors that may contribute to the results presented here. For example, other minerals, vitamins etc. could also be responsible for the observed outcomes. I think the manuscript has merit but needs to address these issues.

The discussion was a little disconnected when mentioning dietary zinc supplementation and the role of zinc in insulin signaling. It is clear that zinc has insulin mimetic properties and is implicated in cell signaling and glucose homeostasis however I don’t think the use of this literature in this current context is justified given that the very small pool of “free” zinc that is available for signaling has only been studied in cell culture models and is mobilized from intracellular stores by an external stimulus. The connection between dietary zinc supplementation and its role in cellular signaling is not clear. Perhaps the discussion should make comment on this.

Minor essential revisions
How was it determined that “Those who were lost to follow-up were not significantly different but were more likely to be born outside Australia, less educated or a current smoker” in Research Design and Methods, The Australian Longitudinal Study on Women’s Health, line 34-36?

What does “fair” mean in “The validation of the FFQ against a 7-day weighted food record showed fair correlation…” in Dietary Assessment, line 12?

**Level of interest:** An article whose findings are important to those with closely related research interests

**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