Reviewer's report

Title: Modification of additive effect between vitamin and ETS on childhood asthma risk by GSTP1 polymorphism: a cross sectional study

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Reviewer: Tianwen Lai

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Lee et al. have investigated the role and links between vitamin A intake, ETS, and GSTP1 polymorphism on childhood asthma. They found that low vitamin A intake and ETS exposure may affect oxidative stress, which may in turn influence childhood asthma risk. These relationships may be modified by genetic susceptibility alleles of GSTP1. This is a potentially interesting finding that needs further research. However, the manuscript needs more work on the clarity and focus of the presented arguments.

Major Revisions:

There needs to be more detail on study population, exposure assessment, diet, and genotyping.

1. Descriptive data on any participants excluded should be given, e.g., supplementary information.

2. A more comprehensive description of the individuals study population characteristics would be useful in future confirmatory studies. Such as disease severity, children smoking status (if possible), blood eosinophils, IgE levels or lung function tests. What was the average duration of children exposed to ETS and the dose of dietary intake of vitamins A, C, and E, retinol, and carotene? And then, further analyze them in relation to risk of asthma and genotyping.

3. Why did authors choose this GSTP1 (rs1695) polymorphisms and only compared with AA and AG/GG? What about other genetic model and allele? Additional details about these should be given.

4. The results doesn't flow very nicely, and is a bit disjointed and repetitive. I think it should be that: first, relationship between ETS and asthma risk; second, effects of ETS on asthma risk by dietary antioxidant intake; third, effect of ETS on asthma risk stratified by genotype and dietary antioxidant intake.

5. In line 170-172 stated that “No association between intake of any of the dietary antioxidants (vitamin A, retinol, carotene, vitamin C, and E) and asthma diagnosis or wheeze in the previous 12 months was found”. However, in the line 178-181 stated that “In children who were exposed to ETS, low dietary vitamin A and retinol intake were more strongly associated with the risk of wheeze in the previous 12 months than were high dietary intake”. This is a fundamental
problem for the studies main conclusion and needs to be addressed in the discussion.

6. In line 184-186 stated that “Children with the AA genotype who had been exposed to ETS and had low intakes of vitamin A or carotene were at increased risk of asthma diagnosis compared with those with children with no ETS exposure and high intakes of vitamin A or carotene...”. Here it is more important and I want to know that whether GSTP1 polymorphism (e.g., AA genotype) in the children may be more susceptible to the deleterious effects of ETS on asthma risk and these effects might derive greater benefit from antioxidant supplementation, e.g., vitamin A or carotene.

7. The format of tables and figures should be modified, such as data inconsistency. In table 1, the total number was 1124, but the ETS (+) was 611 and the ETS (-) was 510, why? Others such as sex (male/female), parental history of asthma. The same questions also in the total number of each group in table 3 and table 4. The figures should be shown as histograms rather than charts.

Minor revisions

1. “The 140 children were divided evenly into groups based on levels of nutrient residuals…” (Line 140). What does this sentence mean? How the categorical variables were presented? What were methods to compare the categorical variables?

2. There should be more information and discussion on the role of antioxidant supplementation, ETS, and GSTP1 polymorphism.

3. The exact criteria for the study participants in this study should be given (even though reference is given).

4. English and grammar needs to be corrected throughout manuscript.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

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

**Declaration of competing interests:**

I declare that I have no competing interests.