Reviewer's report

Title: Influence of phthalates on glucose homeostasis and atherosclerosis in hyperlipidemic mice

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Reviewer: Sijun Dong

Reviewer's report:

Many studies demonstrated that over exposure to phthalates cause health problem. This study focused on the toxic effects of phthalates on glucose homeostasis and atherosclerosis in hyperlipidemic mice, which is a clinical and public health relevant topic. They found that exposure to phthalate gave rise to a brief interference of glucose homeostasis and insulin sensitivity. Although the results were not dramatic, this study provides direct evidence that phthalates exposure increases susceptibility to metabolic disorders in the hyperlipidemic mice. My major concern as follows:

1. Since the phthalates is easy to be metabolized in the organisms, the author should also discuss the influence of phthalate metabolites on glucose homeostasis and atherosclerosis in the mice.

2. Why did the author select the daily dosage was 100 mg/kg? This dosage may be much higher than the exposure levels of general public, range from 1–10 µg/kg/day.

3. Why did the author select female mice? Did the physiological cycle can exert any influence on the results?

4. Due to the widely distributed of phthalates in our environment, what has the author done to avoid the background contamination of phthalates during experiment?

5. As the author acknowledged that there was a possibility that Western diet feeding overwhelmed the effects of phthalate on diabetes and atherosclerosis. Therefore, the author should consider and discuss how to fix this critical problem. May be another 2 additional groups, including control with normal food without phthalate and control with normal food with phthalate are required (Wei, Lin et al. 2011).

6. For the GTT experiment, the blood glucose level has no significant difference between two groups of time points, the author should calculate the area under the curve (AUC) from 0 to 120 min.

7. For the ITT experiment, the author also need to calculate the homeostasis model of insulin resistance (HOMA-IR) index (Liu, Kitajima et al. 2005).

8. Since the apolipoprotein E-deficient (Apoe -/- ) mice is a special animal model? Did the author have any information about the effects of phthalates on the normal mice?
9. In the pathological analysis of atherosclerotic lesions, the author just compared the lesion areas in the aortic root, how about the atherosclerotic lesions of the whole aorta? Meanwhile, did the author have any information about the percentages of macrophages or smooth muscle cells in the lesions?

References


Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests