Reviewer's report

Title: Arsenic-induced dyslipidemia in male albino rats: comparison between trivalent and pentavalent inorganic arsenic in drinking water

Version: 4 Date: 23 December 2014

Reviewer: Michael Hughes

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Major compulsory revisions

Line 114: How were the animals housed, by a group or individually? This is important because the determined arsenic exposure will be more accurate if the animals were housed individually.

Lines 185-186: The pattern of arsenic in blood following arsenate exposure did not have the same pattern as the arsenite-exposed rats.

Lines 235-236: phospholipid concentrations lower at 150 ppm too.

Lines 237-238: significant reduction in phospholipid at 100 and 150 ppm, based on Fig. 5.

Lines 263-265: The decrease in triglyceride in brain of arsenite and arsenate exposed rats was dose-dependent. The figures show different letters than control.

Lines 270-272: The triglyceride in heart of arsenate-exposed rats at the highest dose had the same level of significance as the 100 and 150 ppm. It is not advisable to say it increased. Based on your statistical test, there is no difference in the exposed groups.

Lines 272-274: The lung at 150 ppm arsenite was also significantly increased.

Line 278: phospholipid concentrations in spleen also significantly elevated at 100 and 150 ppm arsenate

Discussion

There is no consideration of metabolism of arsenic in the discussion section. Arsenate is fairly rapidly methylated in the rat (see Adair et al. 2007, Toxicol. Appl. Pharmacol 222, 235-242). Dimethyl arsenic binds to hemoglobin in the red blood cells of the rat (see Lu et al. 2007, Chem. Res. Toxicol. 20, 27-37)

Line 312: At the highest dose of arsenite (150 ppm) and mid-dose of arsenate (150 ppm), the levels in blood are essentially the same (258 and 276 ug/ml). At the 100 ppm dose, there is more arsenic in blood for arsenite (300 ug/ml) than arsenate (228 ug/ml). It isn't clear how it can be stated that there is more
arsenate in blood.

Line 316: I don’t see how the lead-exposed “trend” has any relevancy to the present paper. Lead is a metal that as far as I know, is not metabolized readily compared to arsenic, a metalloid in the rat.

Lines 317-319: If the organs were not perfused, which apparently were not based on what was written in the methods, the high arsenic content is most likely due to the blood, which contains arsenic.

Lines 312-322: the highest arsenic tissue concentrations changed with dose. Need to be specific. For example, at 100 ppm arsenate, heart highest; at 150 ppm, lung highest; at 200 ppm, kidney highest.

Line 323: discussing arsenate, yet Adair find that trimethyl and dimethyl As are major metabolites in urine.

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

**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.