Reviewer's report

Title: Polyunsaturated fatty acids and child neurodevelopment among a population exposed to DDT: a cohort study

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Reviewer: Sylvaine Cordier

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This manuscript proposes evidence of a plausible beneficial effect of PUFAs intake during pregnancy on child neurodevelopment, in the context of population exposed to DDT. This is one of a series of publications issued from a cohort study of children exposed to DDT in Mexico.

The issue of beneficial effects of prenatal PUFAs on child neurodevelopment has been the object of numerous studies, including randomized clinical trials, with mixed results. This additional study with a limited sample size and indirect evaluation of PUFAs intake (using FFQ) is therefore not decisive for this question.

The issue of a possible benefit of PUFAs intake in the context of exposure to contaminants is interesting and has in particular been suggested for prenatal mercury exposure in the Seychelles (Strain JJ et al. 2008). But this implies that in the population studied there is a correlation between PUFAs intake and contaminant exposure (example of mercury), or that an interaction is observed, for instance between low PUFAs intake and high contamination.

However the authors do not present any descriptive data that would document DDT exposure levels (serum DDE levels) and their correlation with PUFAs intake. This correlation is likely to be very low since estimates of the association between PUFAs intake and Bailey scores of infant development are virtually unchanged when DDE maternal level is taken into account (Table 4). In this situation (of low correlation), the interest of the study could therefore be found in the evaluation of the interaction between PUFAs intake and DDT exposure, as they already did in their recent publication of the same analysis at older age (Ogaz-Gonzalez R et al. 2018).

In addition to these major points, I have some other comments:

- in the overall presentation of the limitations of the study, no discussion of the validity of the food frequency questionnaire is presented. Page 7, line 129, they present the reproducibility of this FFQ for folate intake (0.36), but they omit to mention that the correlation with serum folate is in fact very low (0.21) ;
- no discussion either on the potential impact of the 50% exclusion rate between 0 and 30 months;
- page 6, lines 102, they mention 10 ages for neurodevelopment assessments, but only 7 are taken into account in the statistical analysis (page 8, line 161);
- page 8, lines 159-160; I am not very familiar with the model presented, but does it assume that the association between PUFAs and Bailey score would be the same across ages?

A number of sentences should be checked, for instance:

- page 4, last sentence: « We previously reported that…exposure to DDT significantly decreased motor development… ». The authors should be more careful in the interpretation of their findings.

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