

Reviewer's report

Title: Feeding mice with diets containing mercury-contaminated fish flesh from French Guiana: a model for the mercurial intoxication of the Wayana Amerindians

Version: 1 **Date:** 6 April 2008

Reviewer: Kunihiko Nakai

Reviewer's report:

The article tried to provide an important information on methylmercury toxicity using fish meat as exposure source, because the effects of MeHg-added diet might be different from that of MeHg-contaminated fish-added diet. The preparation of diet containing fish meat is very critical in these experiments and probably well designed in this experiment. Even though, several questions should be answered before publication.

- Major Compulsory Revisions

The authors reported that the mice fed with the highest fish diet died after additional one month. However, at the end of the one-month exposure, there were no differences in body weight, mitochondrial respiration rate, and behaviors in comparison with the the control mice. Since the effects of low-dose methylmercury exposure usually proceeds chronically, these findings were very confused. The authors should provide the longitudinal changes in body weight.

In Table 5 and 6, there are no dose-dependent changes; the biggest effect were seen in the mice fed with the diet of the lowest fish, not the mice fed with the diet of the highest fish. If the authors believe these changes due in part to methylmercury exposure, how do the author discuss and explain these findings?

- Minor Essential Revisions

Is there no possibility of external Hg contamination of hair samples? If the authors can not exclude this possibility, please modify the comments on the correspondence to human exposure.

The author wrote that the Wayana's diet usually incorporates up to 10.7% of aimara flesh, not 0.1% (Page 6, lines 13-14), to compare the concentrations of fish meat in animal diets with the Wayana's diet. Is the Wyana's diet also dry weight base?

In the animal experiments using fish meat as exposure material, the important issue is how to control the contents of diets; fish meat contains not only methylmercury but also other contaminants such as Cd and As and nutrients such as fatty acids and proteins different from vegetal diets. At least, the authors should perform the characterization of the diets used carefully, and add a table of

diet components.

Metallothionein 1 and 2 are reactive genes to inorganic mercury. Usually, some part of organic mercury could be converted to inorganic mercury in mice. However, there are no induction of these genes in Kidney, nevertheless of the accumulation of mercury (probably inorganic mercury) in kidneys (Table 2).

It is hard to understand the numbers in Table 4. Is it the number of genes? Otherwise the increased ratio to the control animals?

- Discretionary Revisions

Three diet conditions were used. Was which condition most equivalent to human real exposure? Is the diet of 0.1% dry fish meat from the viewpoint to MeHg intake (Page 6)? Is the second one from the viewpoint of brain Hg concentrations? Is the last one from the viewpoint of hair Hg concentration (Page 11)? Please make clear these points in the manuscript to improve the message to readers.

Level of interest: An article of outstanding merit and interest in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests.