Reviewer’s report

Title: Biochemical and histological alterations induced by the smoke of allethrin based mosquito coil on mice model

Version: 0 Date: 18 Oct 2016

Reviewer: Rui Henrique

Reviewer's report:

In this paper, Al-Mamun and co-workers investigated the effects of exposure to smoke of allethrin based mosquito coil on a mice model, focusing on biochemical alterations in blood and histopathological alterations in lung and liver tissue.

The authors have used increased levels of exposure and found alterations in the mice subjected to higher exposure periods.

This paper deals with a relevant health issue in several countries as this type of insecticide is widely used and its side effects might be deleterious.

The overall experimental design seems appropriate for the aims of the study. Nevertheless, there are several issues that require clarification/correction:

Global issues:

1. There are many typos and mistakes (e.g. "vains" instead of "veins", etc). Thus, language editing is mandatory.

2. The quality of the photos, especially those of the lung are suboptimal and this needs correction.

Material and Methods

1. How do the conditions of exposure of the several groups of mice relate with conditions of human exposure, e.g. in terms of concentration of allethrin? It could be that the higher duration of exposure is not replicated in real life conditions.
2. Why alkaline phosphatase and/or bilirubin were not included as biochemical parameters? Is there any indication in the literature? Could it provide additional information?

3. Concerning the histopathological evaluation, how many blocks were made from each organ? If only one how many sections were visualized and evaluated? Was all tissue from lungs and liver included for histopathological examination?

4. The authors performed ANOVA and student's t test. This means that they assume a gaussian distribution of the values. How was this tested? Admitting that the distribution is, indeed, normal, then student’s T test is not appropriate for pairwise comparisons and a more stringent test must be used (e.g., Scheffe).

Results

1. The histopathological alterations reported are mostly qualitative. Were there quantitative differences?

Discussion

1. The discussion is too long and should be made shorter

2. In page 11, paragraph 3, a study with discordant findings is mentioned, but no reason for the discrepancies is provided. Please elaborate more.

3. The paragraphs about ROS and P53, are mostly speculative as the authors did not evaluate any of those parameters. This should be corrected.

4. How can the authors discard the possibility that the lesions and biochemical alterations found are due to allethrin and not to other compounds present in the coil (although they are considered inert and adjuvant)?

5. No pulmonary functional studies were performed and this is a limitation of the study that must be acknowledged.
Conclusion

1. No effect on cardiac function can be inferred from the data presented, thus this conclusion is not valid and must be removed.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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I am able to assess the statistics

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