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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Relationship between the molecular composition, visible light absorption, and health-related properties of smoldering woodsmoke aerosols" *by* Lam Kam Chan et al.

Anonymous Referee #2

Received and published: 2 November 2019

This study investigated the molecular composition, optical and biological properties of woodsmoke aerosols. Correlations between some identified molecular formulas with MAC and bio endpoints were found. Overall, the analyses are sound, and the manuscript is well-written and easy to follow. I recommend that it can be published following some revisions.

1. I have the same concern as Referee#1 comments (1) and (2) for the selection of cell type. The author should illustrate the rationale to use human epidermal keratinocytes. Also, why such high passage number (25-35) were being used? Usually the cell passage number shouldn't be higher than 20, otherwise the cell response results can be

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Discussion paper

biased.

2. Line 149: cells were incubated with extracts of WSA for 48h. During the 48h incubation in water/acetonitrile solution, cells may not be alive although the author did not find envelope formation in negative control. Did the authors try other cell viability assays to test cell viability? Why the author used such a long incubation time?

3. Line 263: no correlation between chromophoric species with cell toxicity does not necessarily mean they don't contribute to produce cell toxicity, and vice versa. Indeed, there is a recent paper (Chen et al., es&t 2019) showing significant correlation between DTT activity and water-soluble brown carbon.

4. There are a lot of correlation analysis in the manuscript. The authors should also do statistical analysis to show how significant the correlations are.

5. The authors should do some comparisons of their cell toxicity, AhR activity and ER activity results with other previous studies using the same assays. Only looking at the numbers in table 1 cannot get a sense how toxic the WSA are. The authors shall compare their results with other types of aerosols or other toxicants.

Minor comment: 1. Figure S3, scale the x-axis to 0.1 to 4 mg/mL would be better to present the concentration-dependent curves.

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