

Interactive comment on “Comparison between five acellular oxidative potential measurement assays performed with detailed chemistry on PM₁₀ samples from the city of Chamonix (France)” by Aude Calas et al.

Anonymous Referee #2

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General comments This work presents a comprehensive comparison study of five acellular oxidative potential (OP) assays and examination of correlations of OPs with an extensive list of chemical components in PM₁₀ samples collected over a year-long period in downtown Chamonix, France (sample size n= 98). The work was carefully executed. Of special note is that extractions containing the same final concentration of PM₁₀ mas (i.e., 10 ug/mL) were used for the DTT and AA assays, avoiding the complication caused by non-linear response as to PM concentrations. The paper is well-written and the figures are nicely constructed. This work provides a very nice case study of how

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OPs by various assays are associated with different PM₁₀ components. I have a few minor comments listed below.

Specific comments

1. Please describe the sample collection schedule during the one-year period. Were the samples collected following a regular schedule?
2. As the ESR assay only used 75 samples out of the total 98 samples, please include another column in Table S1 to indicate the number of samples in each month used for the ESR assay.
3. Page 15, line13: please list the species that show an antagonist effect. This information is worth a special mention.
4. The samples used in this work were PM₁₀ samples. The coarse PM (PM_{2.5-10}), likely accounting for a significant fraction of PM₁₀, does not penetrate all the way to lung. Some components, such as Ti (likely of dust origin), might mainly reside in the coarse mode. Ti is found to be a positive indicator in the multiple linear regression model equation (Eq. (5) for OP ESR_v). There might be a disconnection between OP responses obtained under physiological conditions simulating lung fluid and actual OP impacts from breathing in of PM₁₀. It will be good that the authors comment on this disconnection.

Minor comments

1. It appears both ASC and AA are used as abbreviation to refer to ascorbic acid. Why two abbreviations?
2. The reference “Chevrier 2016” is given in French. Please provide an English translation and also how this reference can be accessed.
3. Please define “DPCC”. The first appearance is line 6 on page 4.
4. Page 5, line 9: Is “the DDT assay” supposed to be “the AA assay” instead?

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5. Figure S3: is the y-axis label supposed to be “nmol AA/min”?
6. Page 11, lines 2-3: please cite a reference for the criterion for determining whether a correlation is strong or moderate.
7. Table S4: one entry of Mg → Mg²⁺; NO₃⁻ → NO₃⁻; NH₄⁻ → NH₄⁺

Interactive comment on Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2017-1062>, 2017.