

Interactive
Comment

Interactive comment on “On dithiothreitol (DTT) as a measure of oxidative potential for ambient particles: evidence for the importance of soluble transition metals” by J. G. Charrier and C. Anastasio

Anonymous Referee #1

Received and published: 24 May 2012

Responses to questions of Editors

1. Yes
2. The approach is methodical and carefully performed with appropriate statistical analyses.
3. The substantial conclusions are (1) that both metals and quinones participate in the DTT assay and (2) that EDTA should not be used in the assay.
4. The methods are appropriate and well described.

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5. There are some reservations by this reviewer regarding the conclusions and interpretations that will be presented below.

6. The descriptions and calculations are clearly presented.

7, 14. The literature has been reviewed and the shown references appropriate.

8, 9 The title and abstract reflect the nature of the manuscript.

10, 11. The overall presentation is well structured and the language precise.

12, 13. Symbols etc. are appropriate and the figures satisfactory

15. Yes.

General comments on the manuscript.

The work described is very well done and reflective of a carefully thought out study. The results clearly show that metals can also catalyze the consumption of DTT under the conditions of the experimental protocol.

Reviewer comments regarding the conclusions and discussion:

1. It should be pointed out that substances present in the test mixture act as electron transfer agents, or catalysts of the reaction which are recycled, i.e, reduced by DTT or superoxide and reoxidized by oxygen species in a cyclic manner (see Li et al 2009a reference). Further, some metals can participate in other reactions such as the Haber Weiss and Fenton reactions with superoxide and hydrogen peroxide to complicate the overall stoichiometry. In other words, the consumption of DTT can be due to direct reaction of the analyte components with the electron transfer agent or its reaction with a reduced oxygen species such as superoxide, hydrogen peroxide or hydroxyl radical.

2. Although the authors have clearly shown that metals participate in the reactions, their role in a particular sample must necessarily be dependent on the sample itself.

Interactive comment on Atmos. Chem. Phys. Discuss., 12, 11317, 2012.

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