Reviewer’s report

Title: Standardised exhaled breath collection for the measurement of exhaled volatile organic compounds by proton transfer reaction mass spectrometry

Version: 2 Date: 3 April 2013

Reviewer: Borja G Cosio

Reviewer’s report:

I have read with interest Bikov and cols. work entitled “Standardised exhaled breath collection for the measurement of exhaled volatile organic compounds by proton transfer reaction mass spectrometry”. Authors explore an emerging area of research that relates to non-invasive analysis for airway disease monitoring and identify a need for method standardisation. Methodology and statistical analysis are appropriate. The results are novel and clearly explained with simple figures. Discussion points out the main findings and confounding factors that might limit the interpretation of their results. There are some points of minor concern that, if properly addressed, could improve this manuscript.

Points of concern (Minor Essential Revision)

1.- Authors use acetone and ethanol as markers of standard (“healthy”) breath air demonstrating the effect of different breathing patterns or external influences on their concentration. However, the role of these two gases on health and disease is not obvious nor the association of dextrose metabolism or cholesterol biosynthesis on airway inflammation. A clear explanation of why these gases –and no others- where chosen to monitor breath air quality and their relationship with underlying respiratory diseases should be included in the introduction. Also, are the effects of breathing pattern or external influences on ethanol and acetone applicable to other volatile organic compounds? Please, clarify.

2.- It would be of interest to know how these findings can be extrapolated to other methods of measurement of volatile organic compounds different than Proton Transfer Reaction Mass Spectrometry such as nanosensor arrays (“electronic nose”). Please, discuss.

3.- In relation to external influences on volatile organic compounds composition, the effect of tobacco smoke or air pollution would add interesting information, especially when these new tools are thought to be used in patients with airway diseases.

4.- Intersession variability deserves further explanation and details, even if the Bland &Altman test is satisfied!

5.- This reviewer strongly agree with the need of standarisation stated by the authors. However, I miss a clear proposal of standarisation in your manuscript. Which flow rate, fasten time or dead space removal would you propose after your results?
Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests