Reviewer's report

Title: A new paradigm in respiratory hygiene: modulators of airway secretions to improve cough interaction.

Version: 2 Date: 18 May 2005

Reviewer: Bruce Rubin

Reviewer's report:

General

The readability and clarity of the manuscript is greatly improved. This is an interesting and innovative concept supported by pilot data. I applaud these investigators.

I strongly suggest considering the following:

The term mucomodulator is confusing and unnecessary. As noted by the authors, the implied meaning of modulation is to regulate or attune toward a homeostasis and, as such, a mucomodulator might imply a medication that reduced mucus hypersecretion and increased hyposecretion. A more accurate and accepted term for the intervention described by these investigators is mucospissic. As well, the terms "airway clearance" and "expectoration" are used in a misleading manner given the in vitro context of this report. Simulant volume % remaining or expelled describes this accurately without the in vivo connotations. The authors use this very description in the title for Figure 3.

Similarly the title of the manuscript is misleading as the authors neither modulated airway secretions nor did they evaluate cough. I would suggest changing the title to "A new paradigm in pulmonary hygiene: Increasing the viscoelasticity of mucus simulants to decrease cough machine droplet dispersion."

Aerosol dispersion was visually evaluated using a bulls-eye target. This dispersion was not quantified nor were the aerosol particles sized (MMAD and GSD). This is a major limitation to the interpretation of these data. One of the experts in aerosol characterization is on faculty at the investigator's institution, the University of Alberta. I would strongly urge these investigators to contact Prof. Warren Finlay in the faculty of Engineering. I suspect that laser sizing of the generated aerosol cloud would quickly provide quantifiable data on aerosol generation in the cough machine.

It is not at all surprising that increased cross-linking would increase cough clearability. This has been discussed in the past vis a vis the "pea shooter model".

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What next?: Accept after minor essential revisions