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EDITORIAL

Proceedings of the Sixth International Conference on Breath Odor*

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Summary of the conference

The Sixth International Conference on Breath Odor was held at the Royal College of Surgeons of England, London on April 20th–22nd, 2004. The meeting included 70 presentations (23 oral and 47 poster) (see Appendix 1 for abstracts) from 16 countries (Belgium, Brazil, Canada, China, Denmark, Germany, Iran, Israel, Italy, Japan, South Korea, Netherlands, New Zealand, Poland, UK, and USA). The number of papers presented is the largest when compared with all five previous conferences, and the consensus was that the scientific level of the presentations was extremely high.

The scientific community dealing with breath odors is finally reaching consensus as to what are the main issues that require resolution in the coming years. This has been catalyzed by the publication of the ADA guidelines for submission of products for ADA approval that recently appeared. These guidelines, introduced by Wayne Wozniak in his presentation, were the subject of much subsequent discussion during the meeting. The publication of the guidelines is a brave, initial attempt to codify oral malodor measurement, and the ADA acknowledges that they may be modified and improved in the coming years. Thus the onus is now on the research community to suggest how to approach this new challenge.

Several of these challenges are summarized below.

1 Standardization and calibration of odor judges. In the near future, organoleptic scoring is likely to remain as the 'gold standard' method of measuring bad breath, both for the industry and academia. In his presentation, Steve Mason of Hilltop was forthcoming on Hilltop's methodologies. These can now be compared with the independent methods suggested in academic research (e.g. the Greenman Group), and a consensus can be developed in the coming years.
2 Measurement of individual gases. Volatile Sulphur Compounds (VSC) are recognized as being highly associated with oral malodor, and individually measured using the gas chromatography or combined using the Halimeter. Results using the latter may not be as robust as those obtained using GC, but it is easy to use and correlates with the odor judge scores, making it useful in industry and academia. Other instruments, based on VSC and other gases are likely to compete in the coming years, until one with an extremely high correlation with odor judges (e.g. $r > 0.8$) is developed and tested.
3 Trials. How different is morning odor from daytime odor? How do these impact on measurement methodologies? Similarly, how similar are tongue and interdental (or subgingival) odor? Can these two be indiscriminately mixed and matched in trials? What reductions and time periods are appropriate for products that reduce malodor or that prevent malodor from occurring?
4 Microorganisms and their substrates? Which microorganisms are responsible for oral malodor? Are there species which mitigate malodor production (*Streptococcus salivarius* has been suggested in one report, but has been linked to malodor production in another). How does substrate availability and location impact on malodor quality and quantity? Do challenge tests (e.g. with cysteine) reflect on the normal *in vivo* situation? Can biofilm research be helpful in our quest to understand oral malodor? How useful are enzymatic tests?
5 Can components of breath (whether odorous or not) be used to indicate oral and other medical conditions? Can this be accomplished using simple methodologies?
6 How should excessive self-assessment of bad breath be classified, measured and treated? How can people be encouraged to objectively rate their own oral malodor?
7 How should dentists, physicians and other caregivers relate to this common problem?

In addition to over 60 oral presentations and posters (many represented here), the meeting featured four breakout workshops dealing with, (i) odor measurements using human judges, (ii) odor measurements using

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instruments and other laboratory tests, (iii) role of microbiology, and (iv) breath odor trial design and statistics. The workshops were all well attended and the consensus reports are included here (Appendix 2).

Finally, on behalf of all the participants, we would like to express our thanks to all those from the Eastman Dental Institute who have spent much energy in preparing and organizing this conference and our sponsors. We gratefully acknowledge the generous support of the following organizations: Quest International, TheraBreath Oral Products (Platinum sponsors); Abilit Corporation, Colgate–Palmolive (Gold sponsors); GlaxoSmithKline, Bee Brand Medico Dental Company, OneDropOnly, Procter & Gamble (Silver sponsors); Quintessence, British Dental Association, Fresh Breath Ltd (minor sponsors). We are looking forward to the next (7th) Conference of ISBOR in 2 years.

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