

OralChroma™ Used worldwide by dentists and researchers

Oral Gas Analysis and Oral Health Monitoring

OVERVIEW

1. OralChroma & The Dental Practice
 - A pre-examination oral health analysis device
 - Individually measures three breath gases
 - Identifies oral hygiene, periodontal disease & digestive system concerns
 - Use graphical displays to communicate with and educate patients
 - Monitor patient improvement
2. Development of the OralChroma
 - Developed in Japan; widely used there
 - Used by researchers world-wide
 - Introduced to the USA and Canadian dental markets in 2003
3. The OralChroma
 - A portable gas chromatography (GC) breath analysis device
 - GC is the gold standard for breath analysis
 - Utilizes a highly sensitive indium oxide semiconductor gas sensor
 - Highly precise measurements
 - State-of-the-art device
4. Individually measures three breath gases, i.e., volatile sulfur compounds (VSCs)
 - Hydrogen sulfide,
 - Methyl mercaptan and
 - Dimethyl sulfide
5. Sources of Oral Malodor
 - Most malodor originates from diverse bacteria population on the tongue
 - Some malodor from plaque and gingivitis
 - Periodontitis increases tongue coating and oral malodor
 - Extra-oral malodor originates in the digestive and respiratory systems

6. Identifies Oral and Internal Health Concerns

- At significant levels, each of the three measured VSCs is associated with a primary issue affecting oral and internal health
- Hydrogen sulfide: oral hygiene
- Methyl mercaptan: periodontal disease
- Dimethyl sulfide: digestive system

7. Hydrogen Sulfide (H₂S)

- Most everyone has some H₂S in breath
- High levels predominantly associated with poor oral hygiene
- Most H₂S originates from bacteria on the tongue
- Some H₂S from plaque, gingivitis and Periodontitis

8. Methyl Mercaptan (MM)

- High levels primarily restricted to periodontal pathogens (2000ppb)
- Periodontitis typically results in a high MM/H₂S ratio (>3:1)
- Lower levels of MM occur in conjunction with poor periodontal health and poor oral hygiene

9. Dimethyl Sulfide (DMS)

- Originates in the digestive and respiratory systems; also from the tongue, gingival sites, and periodontal inflammation
- Can be associated with systemic diseases, metabolic disorders and medications
- Can also be temporarily caused by certain ingested foods and beverages

10. Significant Features of the OralChroma

- Measures VSCs from 0-1000ppb
- Rapid analysis time-8 minutes
- VSC concentrations displayed on LCD panel
- Graphical displays on a PC using specially designed software (included)
- Patient histories can be stored
- Easy to maintain

11. Cognitive Thresholds--the level at which nose detects malodor
 - H₂S: 112ppb—the least smelly
 - MM: 26ppb—moderately smelly; repulsive at high concentrations (periodontitis)
 - DMS: 8ppb—the most smelly
 - Considerable threshold variation depending on research source

12. DataManager (included w/OralChroma)
 - Real time measurement displays
 - Causative analysis
 - measurements v. cognitive threshold
 - judgment statements
 - Data management—patient histories

13. Interpreting the measurements:
 - H₂S primarily a measure of tongue coating and oral hygiene
 - MM and DMS values similar to H₂S also indicative of tongue coating/oral hygiene
 - MM values > 3 x H₂S values indicative of periodontitis
 - DMS can also be of digestive system and/or metabolism origin

14. Obtaining a Breath Sample
 - Insert syringe in mouth with piston fully inserted
 - Breath thru the nose while keeping oral cavity sealed for 30 sec.
 - Avoid touching tip of syringe w/tongue
 - Pull piston out to fill, then empty in mouth and refill slowly with breath sample

15. Injecting the Sample into the OralChroma
 - Wipe end of syringe to remove saliva
 - Set gas injection needle onto syringe
 - Push piston to 0.5ml position to purge part of sample (to avoid error mode)
 - Inject into input port w/one quick stroke
 - Remove syringe keeping piston depressed
 - Avoid bending needle

16. Guide to Breath Samples

- Two consecutive breath samples are rarely chemically identical—use an average
- Use only the syringes provided by ABILIT—the materials have been chosen to maximize measurement precision
- Use only one breath sample from each syringe

17. Maintaining the OralChroma

- Very easy to maintain
- Replace the gas inlet rubber plug after 200 injections (green light blinks)
- Replace the sensor and column after 10,000 uses
- Avoid introducing gases and chemicals to the area around the OralChroma

18. OralChroma Correlation Coefficients

- The OralChroma is highly precise, Pearson Correlation Coefficients:
 - H₂S r=.867
 - CH₃SH r=.855
 - (CH₃)₂S r=.806
- Correlation coefficients for full size GCs are only somewhat higher

19. OralChroma GC Sulfide Monitor

	OralChroma	GC	Monitor de Sulfuros
Precision	Very Good	Best	Worst
Portability	Yes	No	Yes
Cost	Low	Expensive	Low
Operability	Easy	Difficult	Somewhat easy
Three VSCs	Yes	Yes	No
Maintenance	Easy	Difficult	Easy

20. OralChroma Vs. Halimeter

OralChroma	Halimeter
Simplified GC	Not GC
Measures 3 VSCs individually	Combined measurement of VSCs
Minimizes affect of influencing gases and humidity	Affected by influencing gases and humidity
Reproducible Results	Inconsistent Results
2 year column and sensor life	6-12 month sensor life

21. Why Use the OralChroma?

- Most desirable combination of precision, portability, ease of operation and maintenance, and cost for clinical malodor measurements
- The only clinical device that measures three VSCs individually

22. Recommended procedure sequence

- An ideal pre-examination device
- Take a breath sample before performing any other procedures
- Provides dentist and patient with an objective overall oral health analysis

23. Summary--The OralChroma:

- detects/measures severity of oral malodor
- differentiates among the causes of malodor
- identifies oral hygiene effectiveness, periodontitis and digestive system concerns
- identifies need for preventative dentistry
- provides patient with educational printouts

24. OralChroma package includes:

- One OralChroma unit
- DataManager software
- Instruction Manuals
- 100 syringes
- 5 gas inlet port rubber plugs
- 2 injection needles

THANK YOU FOR YOUR TIME AND YOUR INTEREST IN THE OralChroma