



Second Semester-Halitosis

Lec.17.part1

By assistant lecturer: Reham Adnan Radhi
Department of periodontology
College of dentistry
University of Basrah

Breath Malodor

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✓ Halitosis is defined as an obvious malodor of the breath beyond a socially acceptable level, One in four persons will encounter this problem during his or her lifetime.

▪ Originate from two Latin word

✓ Halitus → breath

✓ Osis → disease

▪ Synonyms

- Halitosis
- Bad breath
- Fetor ex ore
- Oral malodor



Etiology

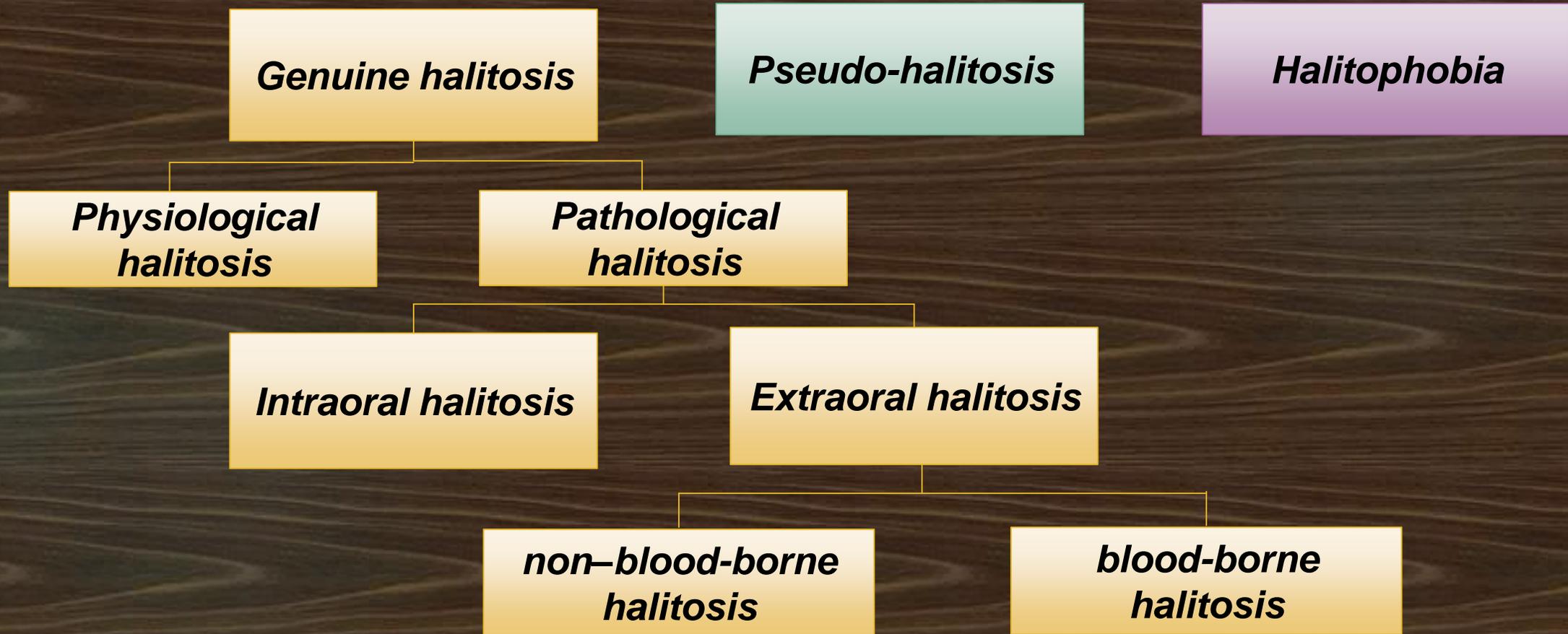
- In most patients, breath malodor originates from the oral cavity.
- A large-scale study including 2000 patients with halitosis complaints showed that for those patients whose bad breath could be objectively detected, the cause was mostly found within the **oral cavity (90%)**. **Tongue coating (51%)**, **gingivitis or periodontitis (13%)**, **or a combination (22%)** accounted for the majority of the cases.
- The minority of patients (**4% in the same study**), **extraoral causes could be identified**, including ear, nose, and throat (ENT) disorders, systemic diseases (e.g., diabetes), metabolic or hormonal changes, hepatic or renal insufficiency, bronchial and pulmonary diseases, or gastroenterologic disorders.

Pathogenesis of oral malodor

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Classification



Genuine halitosis

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✓ Genuine halitosis is the term that is used when the breath malodor really exists and can be diagnosed organoleptically or by measurement of the responsible compounds .

- **Physiological halitosis**

- Transient disturbing odors caused by food intake (e.g., garlic, onions, and certain spices), smoking, or medications (e.g., metronidazole) and do not reveal a health problem.



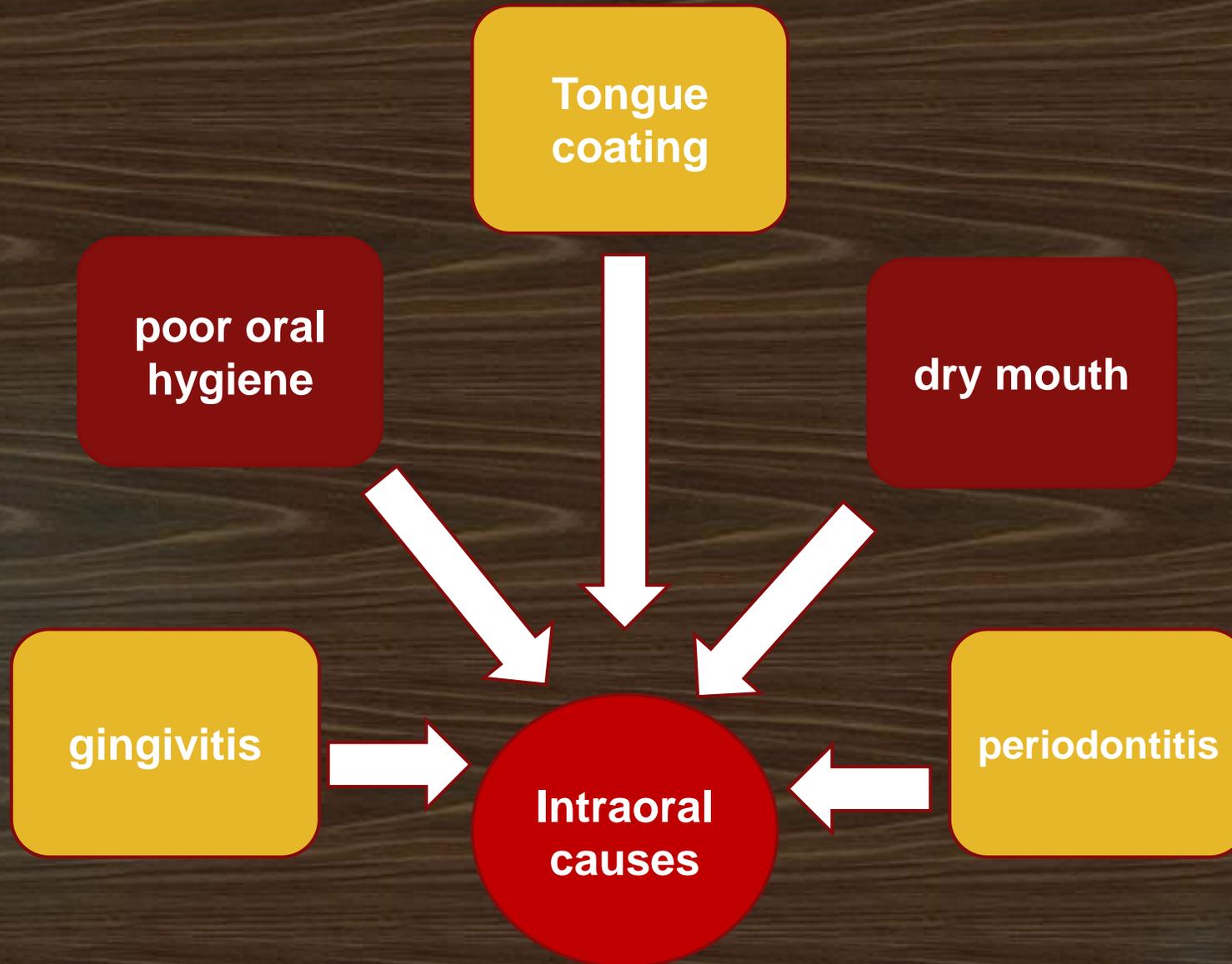
- **Pathological halitosis**

- Intra oral or extraoral origin
- 90% of patient oral cavity
- Bacteria, volatile Sulphur compound



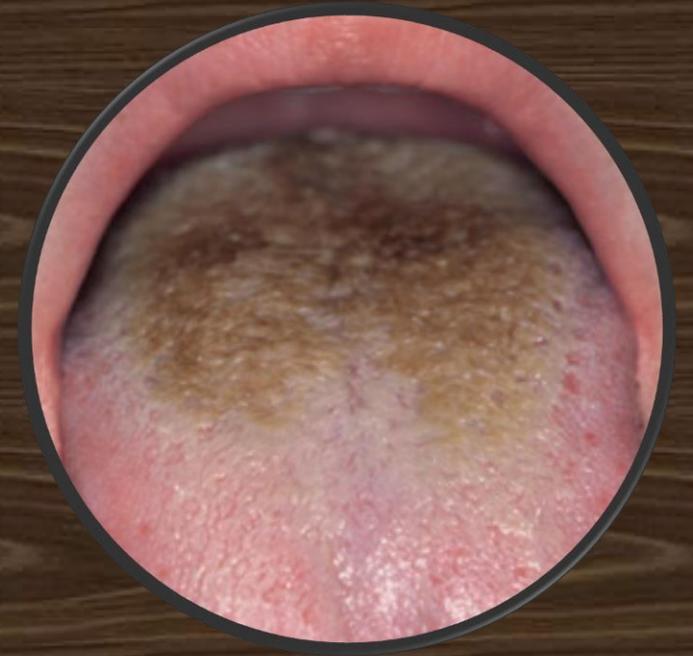
Intraoral origin

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■ Tongue and Tongue Coating

- ✓ Tongue coating is the most important cause of halitosis. The innumerable depressions in the tongue surface are ideal niches for bacterial adhesion and growth; additionally, desquamated cells and food remnants also remain trapped in these retention sites.
- ✓ The degradation of organic substrates by anaerobic bacteria results in the production of a range of unpleasant-smelling volatile compounds.



Periodontal Infections

- A relationship between periodontitis and oral malodor has been shown. Bacteria associated with gingivitis and periodontitis are indeed able to produce VSCs.
- Several studies have shown that VSC levels in the mouth correlate positively with the depth of periodontal pockets (the deeper the pocket, the more bacteria, particularly anaerobic species) and that the amount of VSCs in the breath increases with the number, depth, and bleeding tendency of the periodontal pockets.
- The increased production of volatile sulfur compounds in people with bad breath may accelerate the progression of periodontal disease. For example, it is known that methylmercaptan and hydrogen sulfide can adversely affect collagen structure and gingival fibroblasts.

Dental Disorders

- Deep carious lesions with food impaction and putrefaction.
- Extraction wounds filled with blood clots.
- Purulent discharge leading to important putrefaction.

- Acrylic dentures, especially when kept continuously in the mouth at night or not regularly cleaned, can lead to infections (e.g. candidiasis), which produce a typical smell.

Dry Mouth

- Saliva has an important cleaning function in the oral cavity. Patients with xerostomia often present with large amounts of plaque on teeth and extensive tongue coating. The increased microbial load and the escape of VSCs when salivary flow is reduced explain the strong breath malodor.
- Other causes of xerostomia are medication, alcohol abuse, Sjögren syndrome (a common autoimmune rheumatic disease), and diabetes.



Extraoral origin

Extraoral causes can be identified, including:

- ENT disorders,
 - Systemic disease (e.g., diabetes or kidney disease),
 - Metabolic or hormonal changes,
 - Hepatic or renal insufficiency, bronchial and pulmonary diseases,
 - Gastroenterologic disorders.
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- ❖ **Non–blood-borne halitosis** encompasses, for example, throat infections, nasal infections, infections of the respiratory system, lung diseases, and stomach disorders.
 - ❖ **Blood-borne halitosis** is the result of bad-smelling metabolites that can be formed or absorbed at any place in the body (e.g., the liver, the gut) and transported by the bloodstream to the lungs.

Example of systemic pathological condition that cause halitosis

Systemic condition	Characteristics odor
Uncontrolled diabetes mellitus	Sweet odor of ketones
Liver disease	Sulfur odor
Kidney failure	Fishy odor

Only in a few cases is the cause of bad breath found outside the oral cavity. Thus, dentists play an important role in the diagnosis and treatment of halitosis.

Pseudo-halitosis

- ✓ When an obvious breath malodor cannot be perceived but the patient is convinced that he or she suffers from it.

Halitophobia

- ✓ If the patient still believes that bad breath is present after treatment of genuine halitosis or diagnosis of pseudo-halitosis, one considers halitophobia, which is a recognized psychiatric condition.

Diagnosis of Malodor

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Course of a Halitosis Consultation

- Preconsultation patient information.
- Anamnesis.
- Organoleptic examination.
- Examination of the breath with portable sulfur monitor
- Oropharyngeal examination.
- Explanation of halitosis and instructions for oral hygiene.
- If necessary, explanation of additional therapy.

Preconsultation Approach

- It is recommended that the patient does not eat garlic, onions, or spices for 2 days before the consultation.
- To remove confounding odors, the patient is also instructed to refrain from alcohol, coffee, and smoking during the 12-hour period before the consultation.
- It is advisable not to use chewing gum, mints, drops, or mouth rinses during the 8 hours preceding the appointment.
- The day of the consultation, the use of shampoo, body lotion, and perfume should also be avoided, so as not to disturb the organoleptic ratings.

Anamnesis

- Each consultation should start with thorough questioning about the breath malodor, eating habits, and medical and dental history.
- To start with the patient should be asked about the frequency of the halitosis.
- The time of appearance during the day ,
- When the problem first appeared, and whether others have identified the problem (to Exclude imaginary breath odor).
- In addition, the medical history has to be recorded

Organoleptic Rating

- organoleptic assessment by a judge is still the gold standard in the examination of breath malodor.
- Organoleptic measurement can be carried out simply by sniffing the patient's breath and scoring the level of oral malodor.

□ Organoleptic scores (0-5) by Rosenberg, where,

- ✓ 0 represents the absence of odor,
- ✓ 1 is barely noticeable odor,
- ✓ 2 is slight malodor,
- ✓ 3 is moderate malodor,
- ✓ 4 is strong malodor, and
- ✓ 5 is severe malodor.

In an organoleptic assessment, the judge smells a series of air samples, as follows

- **Nasal breath odor :** The subject expires through the nose while keeping the mouth closed. When the nasal expiration is malodorous yet the air expired through the mouth is not, an ENT problem can be suspected
- **Oral cavity odor:** The subject opens the mouth and refrains from breathing while the judge places his or her nose close to the mouth opening (approximately 10 cm from the patient's mouth).



- **Oral cavity odor:** The patient counts from 1 to 10. This reveals the same as described earlier, but favors oral malodor because of drying of the palatal and tongue mucosa.
- **Tongue coating:** The judge smells a tongue scraping from the posterior part of the tongue, obtained with an odorless plastic spoon or tongue scraper, at a distance of approximately 5 cm from his or her nose. This odor resembles that emanating from the tongue dorsum.



Portable Volatile Sulfur Monitor

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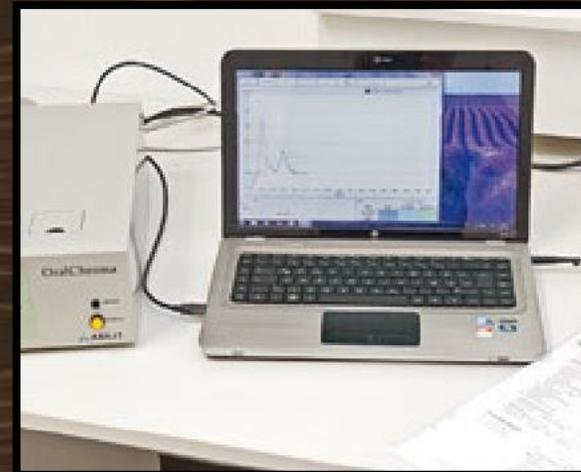
- The Halimeter is an electronic device that detects the presence of VSCs such as hydrogen sulfide and methylmercaptan in breath, The instrument cannot discriminate among the different sulfur compounds.
- To allow an increase in concentration of VSCs, the patient has to keep his or her mouth closed for 2 to 3 minutes before sampling.



Gas Chromatography

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- A gas chromatograph can analyze air, saliva, or crevicular fluid.
- Sample collection is done by use of a disposable syringe. The patient must close the mouth for 30 seconds before sample collection, and afterward the sample is injected into the gas chromatograph.
- The Oral Chroma has the capacity to measure the concentration of the three key sulfur compounds (hydrogen sulfide, methylmercaptan, and dimethyl sulfide) separately. This can be helpful for a differential diagnosis.



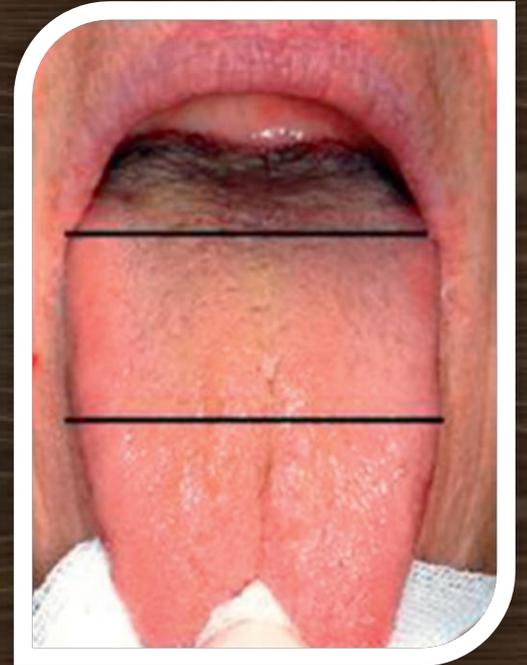
Halimeter Versus OralChroma

Halimeter	OralChroma
Easy to handle	Easy to handle
Affordable	More expensive
Displays results immediately	Takes 4 min (CHM-2) or 8 min (CHM-1) before measurements are shown
Cannot discriminate among different gases	Can discriminate among hydrogen sulfide, methylmercaptan, and dimethyl sulfide
Maintenance needed	Maintenance needed

Oropharyngeal Examination

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- The oropharyngeal examination includes inspection of deep carious lesions, interdental food impaction, wounds, bleeding of the gums, periodontal pockets, tongue coating, dry mouth, and the tonsils and pharynx (for tonsillitis and pharyngitis).
- Miyazaki tongue coating index:
 - ✓ **Score 0** = none visible,
 - ✓ **score 1** = less than one-third of the tongue dorsum covered,
 - ✓ **score 2** = less than two-thirds, and
 - ✓ **score 3** = more than two-thirds.



□ Winkle tongue coating index. Divide the dorsum of the tongue into six areas, (i.e., three in the posterior and three in the anterior part of the tongue)

□ **The tongue coating in each sextant is scored as**

- ✓ 0 = no coating,
- ✓ 1 = light coating,
- ✓ 2 = severe coating.

- A score of 1 is given when the pink color underneath the coating is still visible; when this is not the case, 2 is given.



Dark-Field or Phase-Contrast Microscopy

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Oral malodor is typically associated with a higher incidence of motile organisms and spirochetes, so shifts in their proportions allow monitoring of therapeutic progress.

Another advantage of direct microscopy is that the patient becomes aware of bacteria present in plaque, tongue coating, and saliva. Too often, patients confuse plaque with food remnants.

Self-Examination (Subjective test)

- Smelling one's own breath by expiring into the hands in front of the mouth is not relevant because the nose becomes used to the odor, and the smell of the skin and soap used for handwashing may interfere.



Thank
you

