



## INTRODUCTION

**Objective:** to describe a clinical diagnostic technique, named **HALITUS** (*Halitus = exhaled breath*), to allow the diagnosis of the origin of breath malodor, through organoleptic test, accomplished with patients in the daily clinical practice. The possibilities of diagnostic are to diagnose a **NASAL, ORAL or SYSTEMIC** halitosis origin or even the presence of 02 of the halitosis causes above mentioned, happening concomitantly.

Some authors have already mentioned the possibility of the diagnosis through organoleptic test:

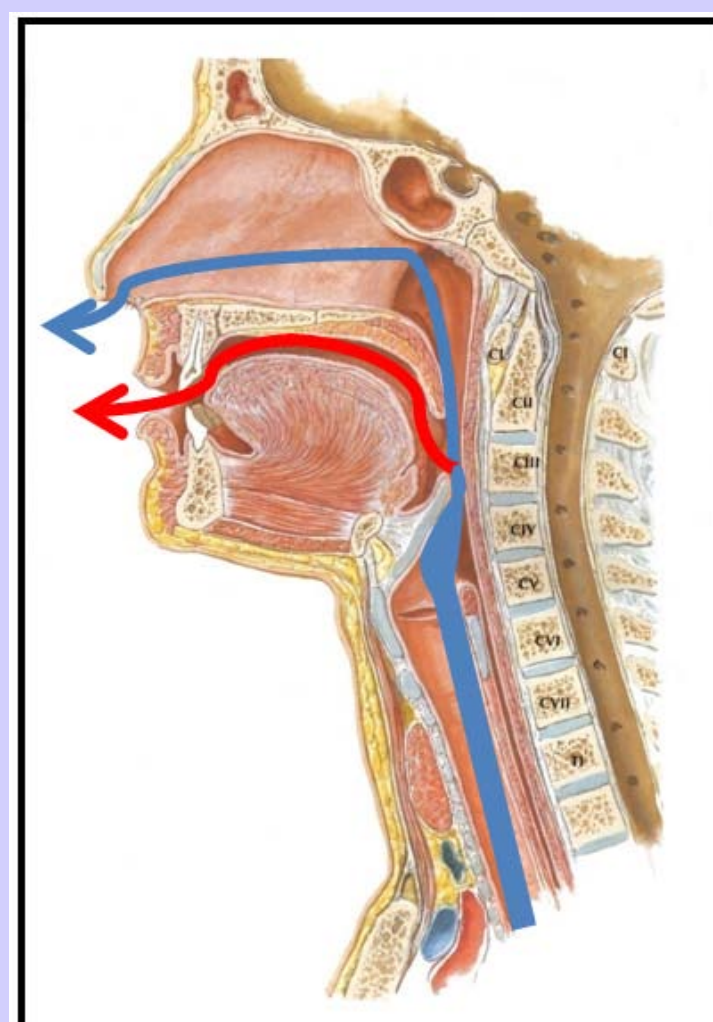
1-) "The simplest way to distinguish oral from non-oral etiologies is to compare the smell coming from the patient's mouth with that exiting the nose. If the odor is primarily from the mouth, an oral origin may be inferred". (Grapp GL, 1933 *apud* Rosenberg, 2006, p. 476).

2-) Tangerman & Winkel, 2008, also mentioned that "Blood-borne extra-oral halitosis might be a manifestation of a serious disease. Therefore, it is of utmost importance to differentiate between intra-oral and extra-oral halitosis. This can be easily done by comparing mouth breath with nose breath."

## METHODS

DEPENDING ON THE RESULTS OF NASAL AND ORAL ORGANOLEPTIC TESTS, BREATH MALODOR ORIGIN CAN BE DIAGNOSED AS AN ORAL, SYSTEMIC OR NASAL OR EVEN DUE TO 02 CONCOMITANT CAUSES.

**ORAL CAUSE:** If the organoleptic test is positive (*has an alteration diagnosed as being considered halitosis*) only for the mouth expired breath, the alteration has an oral cause, being the palatine tonsils diseases an exception, because although the palatine tonsils are located at the transition of the mouth to the oropharynx, their malodor has an oral repercussion.



Blue color: natural breath  
Red color: malodor

**\* 90 to 95% of the cases**

\* 1-) Quirynen *et al.* Characteristics of 2000 patients who visited a halitosis clinic, J Clin Periodontol, 2009.

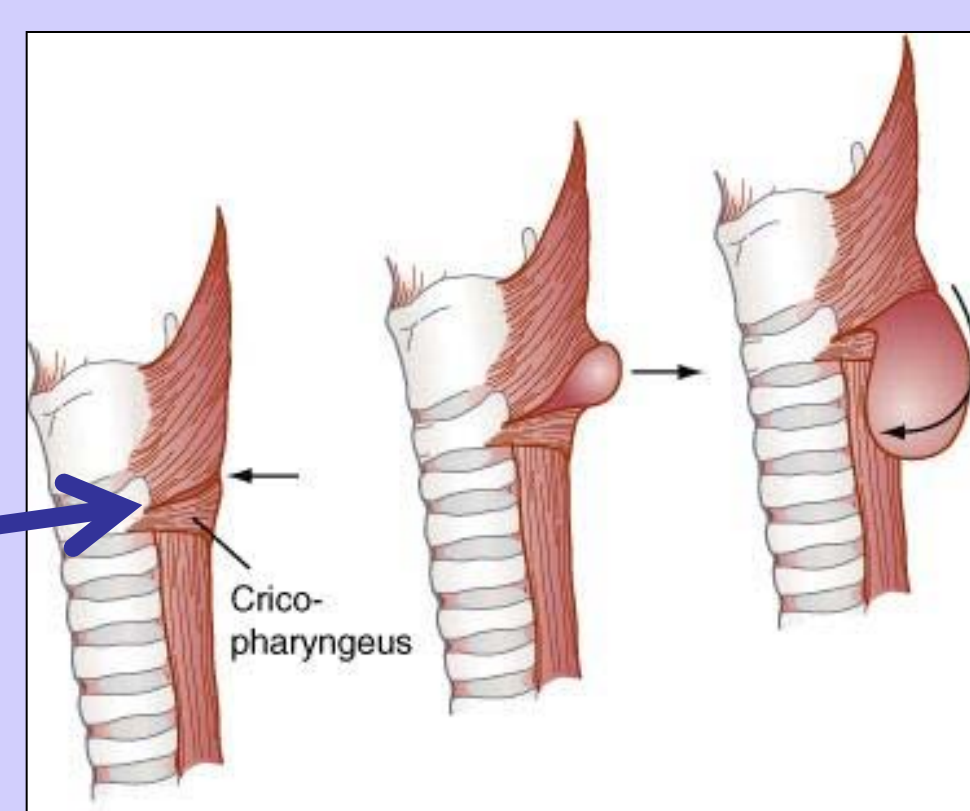
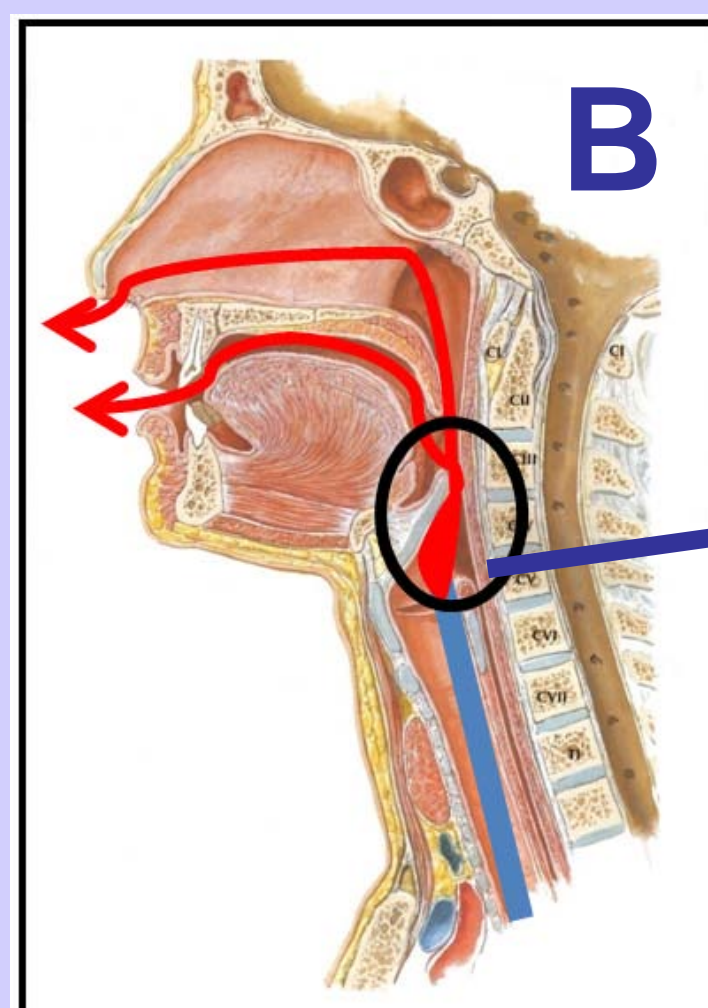
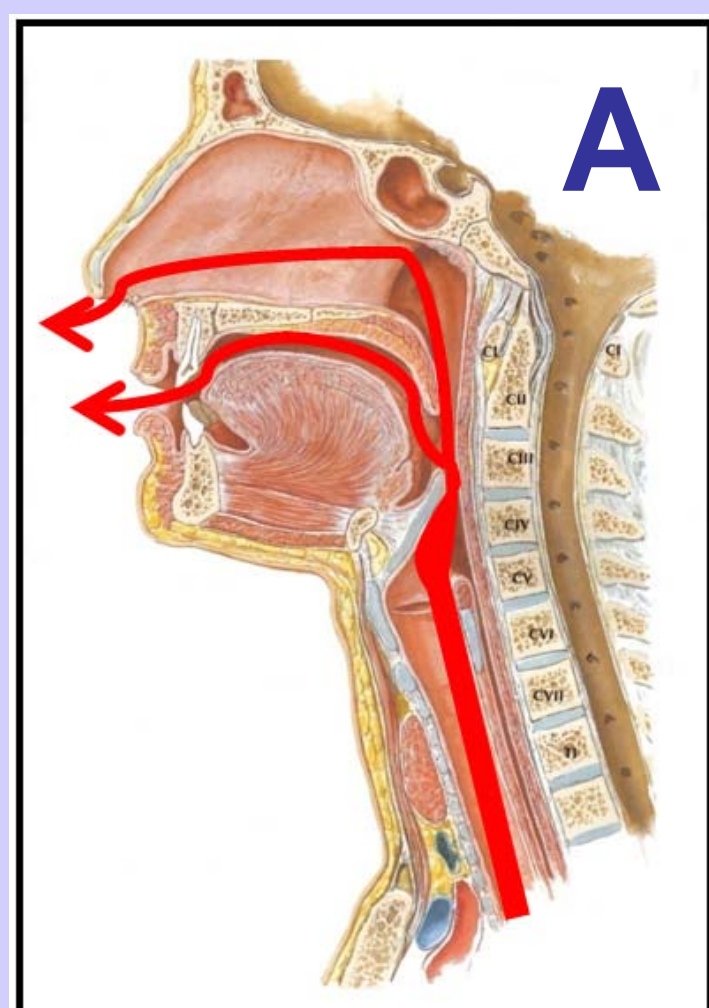
2-) Tangerman A & Winkel E G, Extra-oral halitosis: an overview, J. Breath Res, 2010.

**SYSTEMIC CAUSE:** If organoleptic test is positive for the mouth and nasal expired breath, with the same odor characteristic, the alteration has a systemic cause (extra-oral blood-borne halitosis) – **FIGURE A.**

**EXCEPTIONS:**

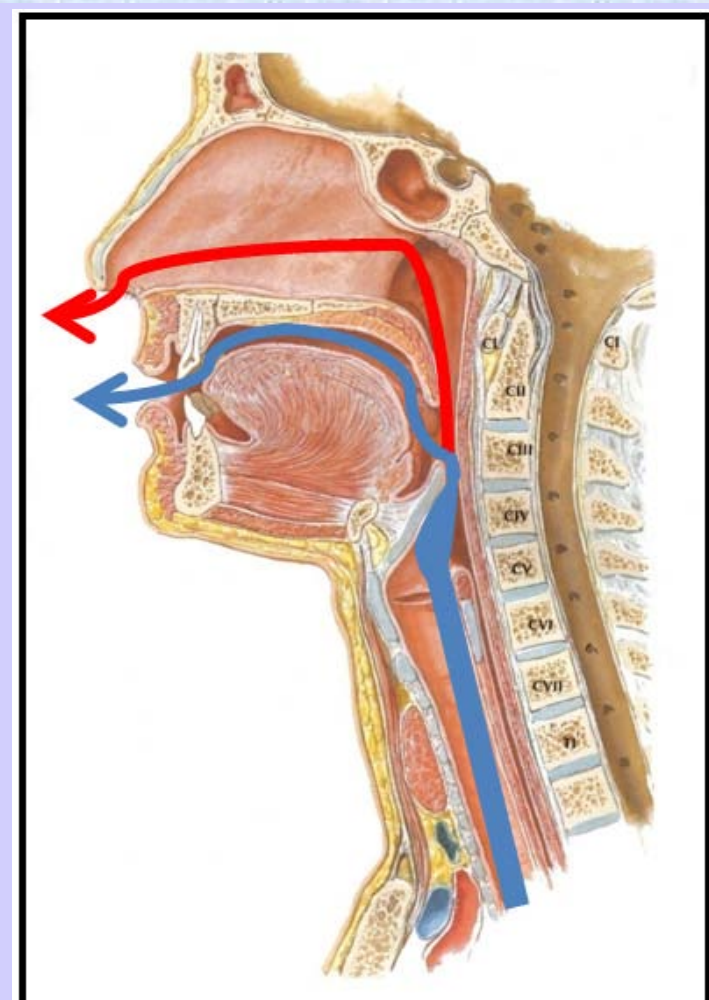
- 1-) Oropharynx or hypopharynx diseases and the *Zenker's diverticulum* – **FIGURE B.**
- 2-) Lower respiratory tract diseases (lung cancer or abscess, emphysema, etc.)

Blue color: natural breath  
Red color: malodor



Zenker's diverticulum

**NASAL CAUSE:** If the test is positive only for the nose expired breath, the alteration has a nasal cause. It's rare and if it happens, refer the patient to an ENT specialist.



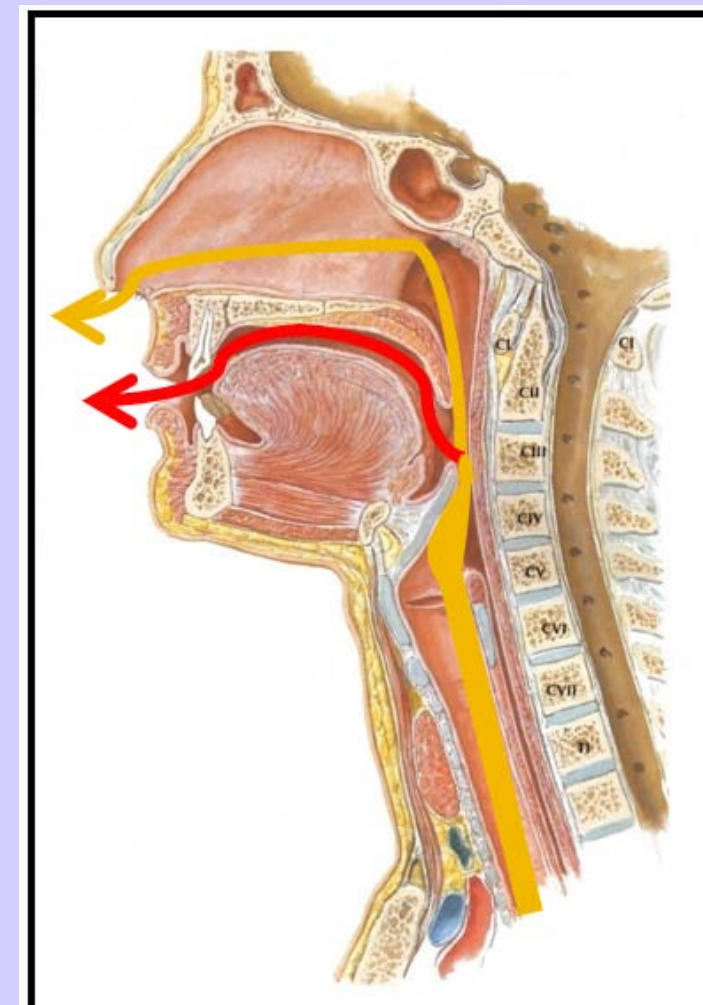
Blue color: natural breath  
Red color: malodor

**NASAL CAUSE:** any possible source of malodor located in the nasal cavity, paranasal sinuses and adjacencies.

**CONCOMITANT CAUSES:** Finally, if the test is positive for the mouth and nasal expired breath, with 02 different odors, a concomitant cause is happening.

**THERE ARE 02 POSSIBILITIES FOR A CONCOMITANT HALITOSIS:**

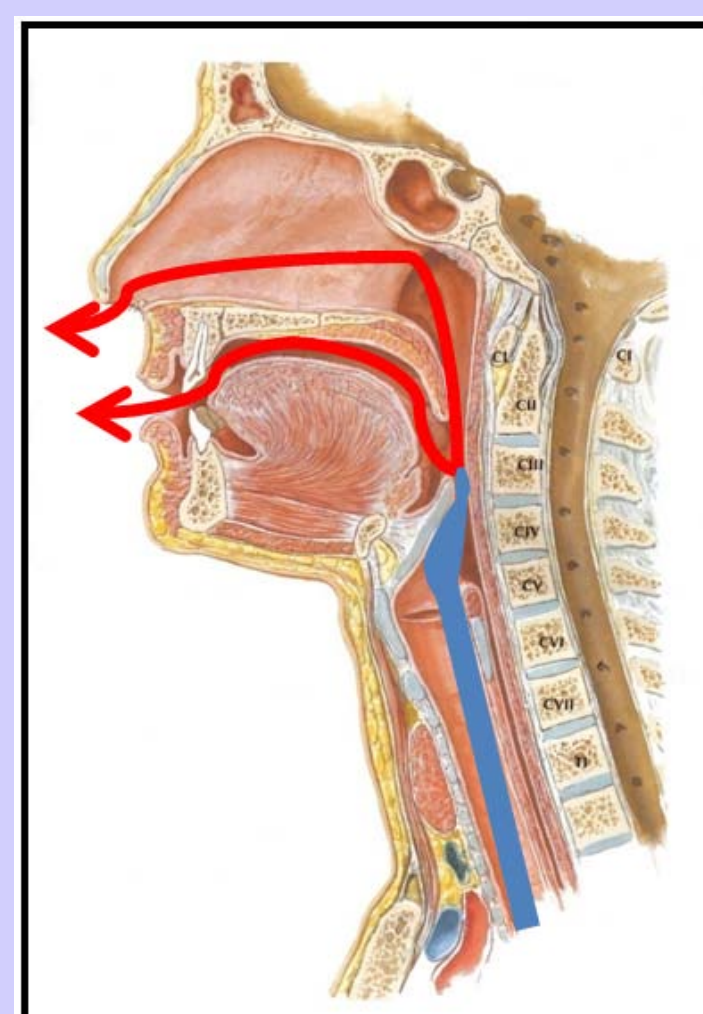
1-) **ORAL and SYSTEMIC** causes happening concomitantly



Mustard color: lighter malodor  
Red color: stronger malodor

A breath malodor comes from the lungs (extra-oral blood-borne halitosis) and it gets stronger by going through the mouth, due to halitosis mouth causes.

2-) **NASAL and ORAL** causes happening concomitantly



Blue color: natural breath  
Red color: malodor

This possibility can be verified only after treating the oral halitosis causes.

If the **NASAL** malodor persists, oral and nasal halitosis were happening concomitantly. It's very rare. Refer the patient to an ENT specialist.

## BREATH MALODOR ORIGINS

### DETECTED THROUGH ORGANOLEPTIC TEST

ORAL ORGANOLEPTIC TEST	NASAL ORGANOLEPTIC TEST	BREATH MALODOR ORIGIN
Normal	Normal	Natural Breath
Malodor	Normal	<b>Oral Halitosis</b> (90 to 95 % of the cases)
Malodor	Malodor	<b>Systemic Halitosis</b> (extra-oral blood-borne Halitosis)
Malodor with a stronger intensity	Malodor with a lighter intensity	<b>Oral Halitosis with a concomitant Systemic Halitosis</b>
Normal	Malodor	<b>Nasal Halitosis</b>

The HALITUS halitosis origin diagnostic technique was tested and evaluated in 381 patients of Halitus Clinic, in the cities of Sao Paulo and Campinas, state of Sao Paulo, Brazil, in the years of 2008 and 2009.

## RESULTS

The accuracy of HALITUS technique in the daily clinical practice proved to be highly reliable and useful to look for the source of a possible cause, in cases of a breath malodor.

## CONCLUSIONS

With this clinical diagnostic technique we expect to help clinicians to diagnose the source of a breath malodor in their patients, whenever it happens, facilitating the diagnostic and treatment of the problem, improving this way, the treatment results