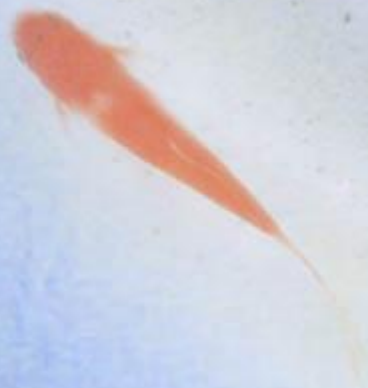


Halitosis

(Oral Malodor)

Treatment



The Bad Breath Paradox

Many suffer. Relatives won't say



**DON'T FOOL
YOURSELF**

Since halitosis never announces
itself, to the victim, you simply
cannot know when you have it.



Halitosis makes

It is unexcusable . . . can be
instantly remedied

you unpopular

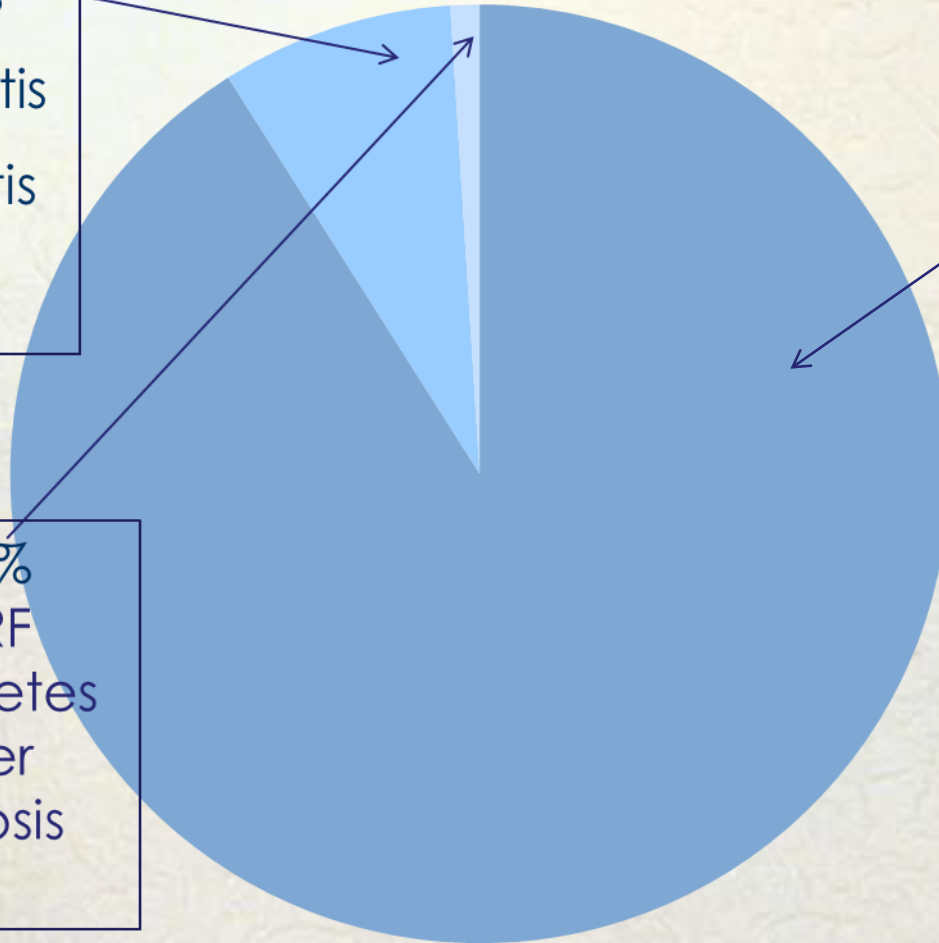
Causes (Intrinsic)

7-8%
Tonsillitis
Sinusitis
F.B.

<1%
CRF
Diabetes
liver
cirrosis

>90%
Tongue
Ging./Perio.
Faulty rest.
Dryness

■ Oral
■ E.N.T.
■ Systemic



Oral Malodor



Malodor = Bacterial Activity



Outside



is a smelly clob and a heavy sleeper!

Glycoproteins (mucin)

Deglycosylation
(Gram-positive via
 β -galactosidase)



Proteins Proteolysis
(Gram-negative anaerobes)



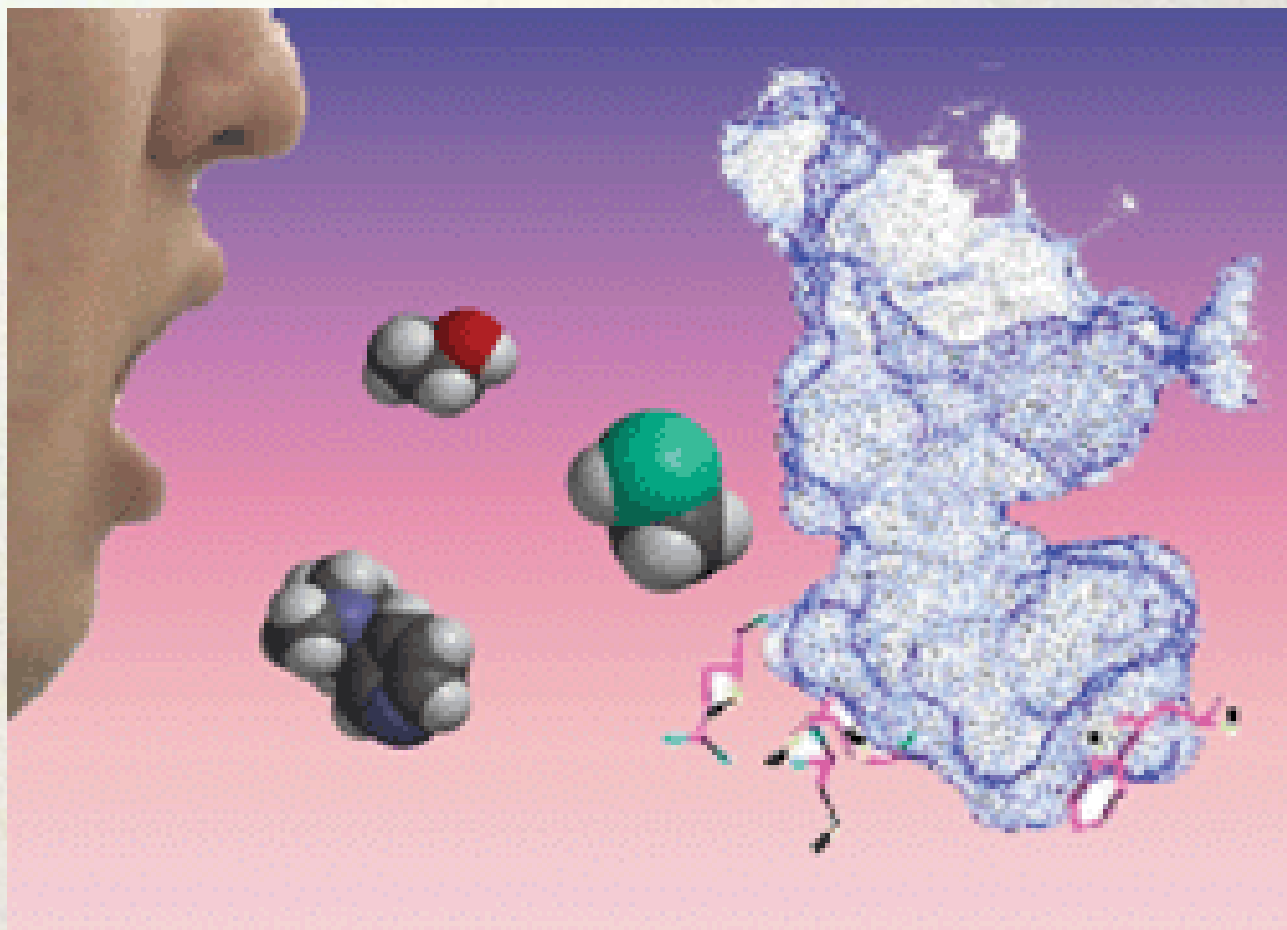
Amino acids



Malodor



Malodor Producing Compounds



Malodor Producing Compounds

Amino acids

Cysteine

Methionine

Lysine

Arginine

Tryptophane

odoriferous by-products

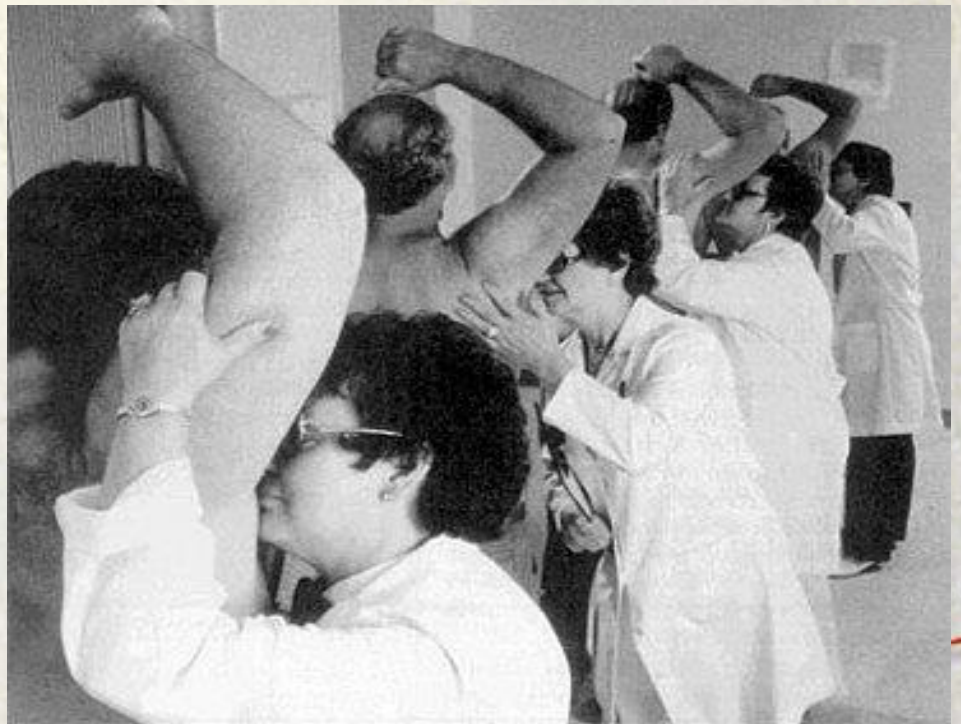
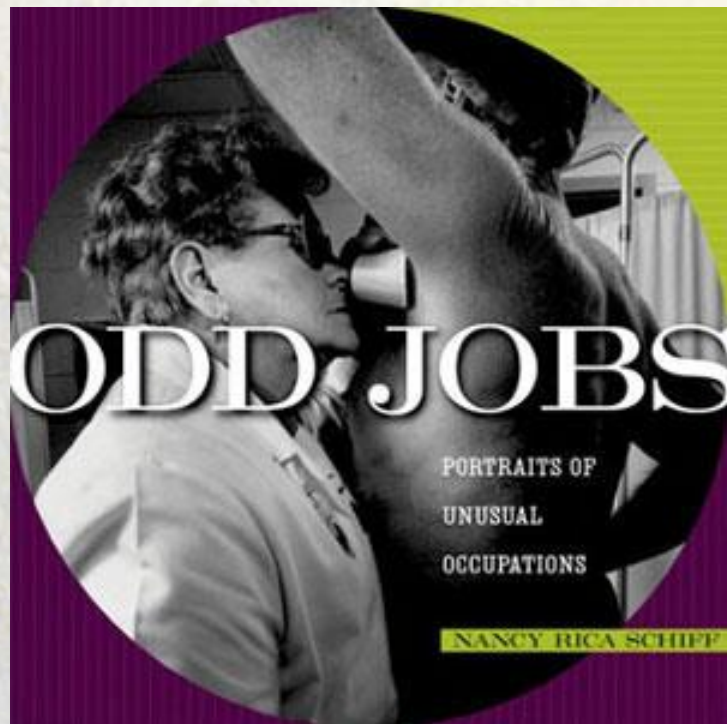
Hydrogen sulfide

Methyl mercaptane
(VSC)

Cadaverine,
Putrecine

Indole, Skatole

Organoleptic Measurements



Odor Judge Scores

- 0 – No odor
- 1 – Barely noticeable
- 2 – Slight
- 3 – Moderate
- 4 – Strong
- 5 – extremely foul

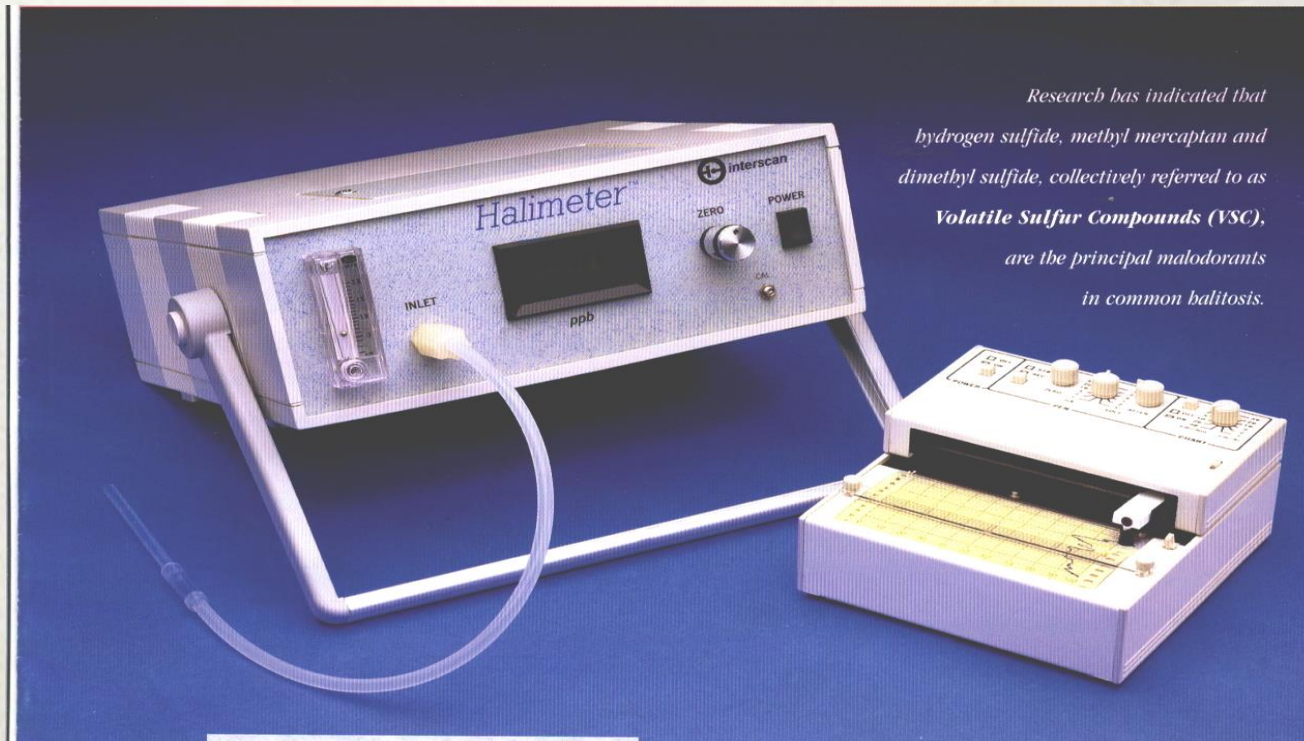


Figure 1. Organoleptic measurement of oral malodour. The patient exhales breath into a tube that is inserted through a privacy screen.

VSC

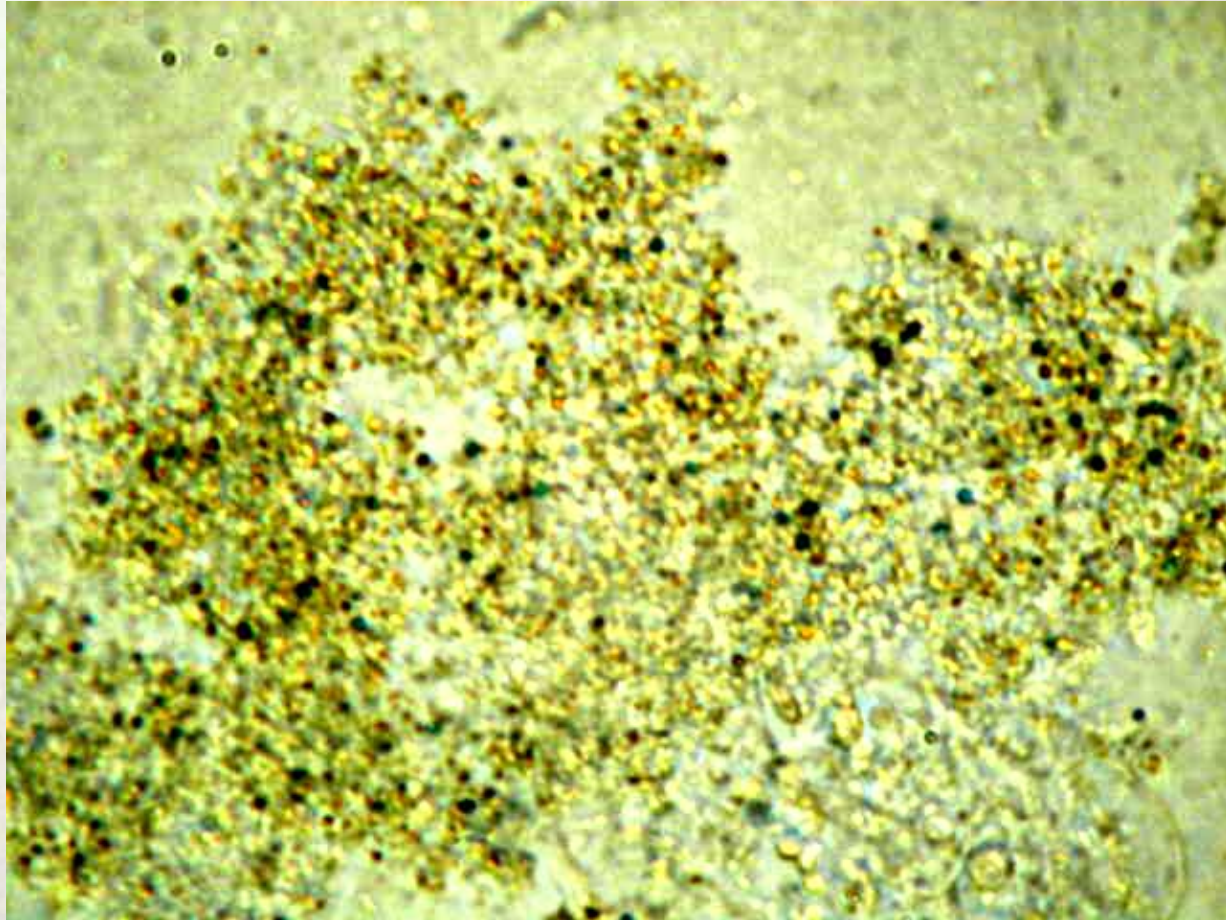
Volatile sulfide compounds measurements

Halimeter™



Rosenberg et al., *J Dent Res*, 1991

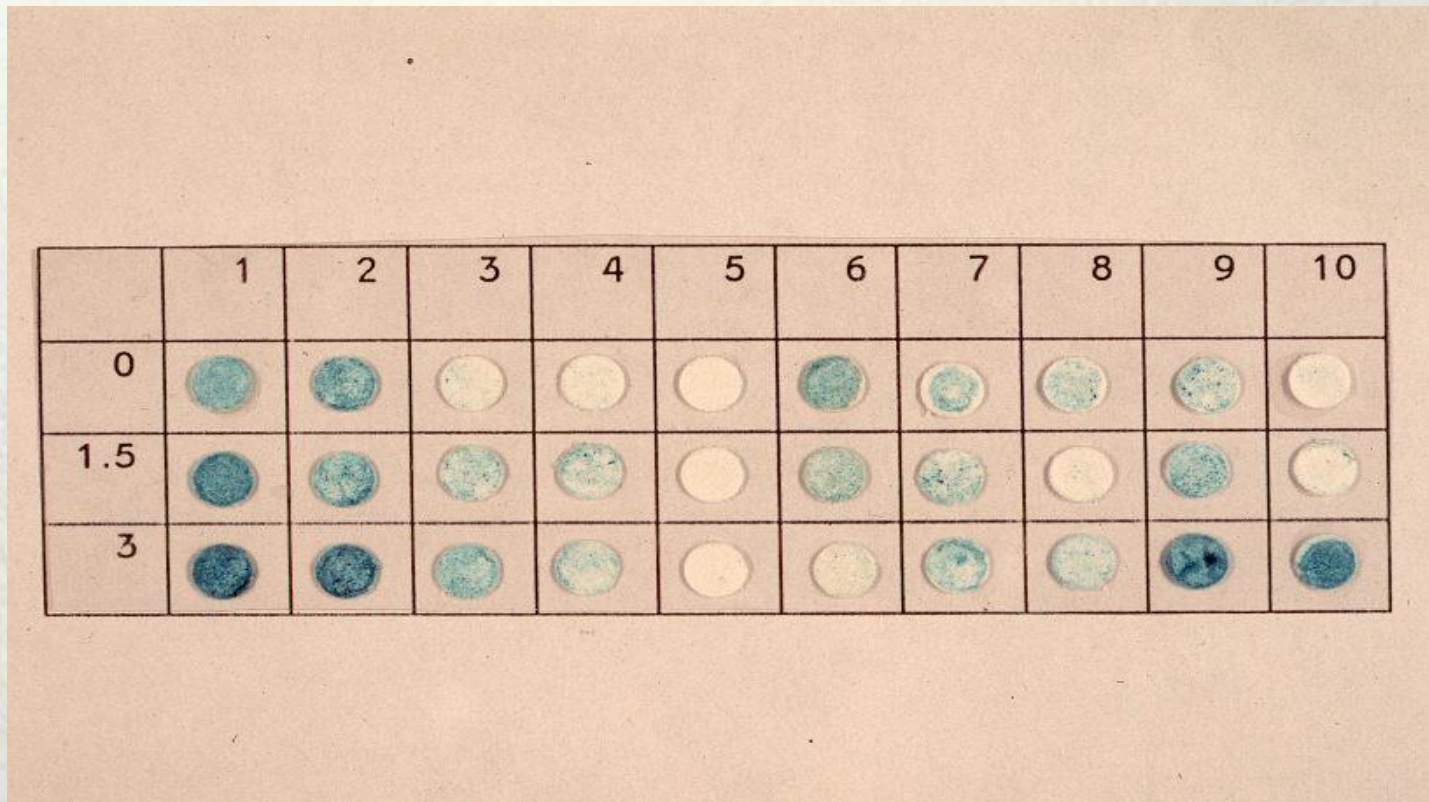
VSC producing Microorganisms



Sterer et al., *Journal of Breath Research*, 2008

“Seeing” The Smell

Measurements of β -galactosidase activity in saliva



Sterer et al., *J Dent Res*, 2002

Treatments

Take Two Tic Tacs
and Call Me in the
Morning



way to pay for it.
The point is, dentists are flexible
and innovative and can solve any prob-
lem by going around it, over it or, if neces-

Treatment strategies

1. Natural Product, Oral S.R.

1. Antimalodorous

2. Antibacterial effect (selective)

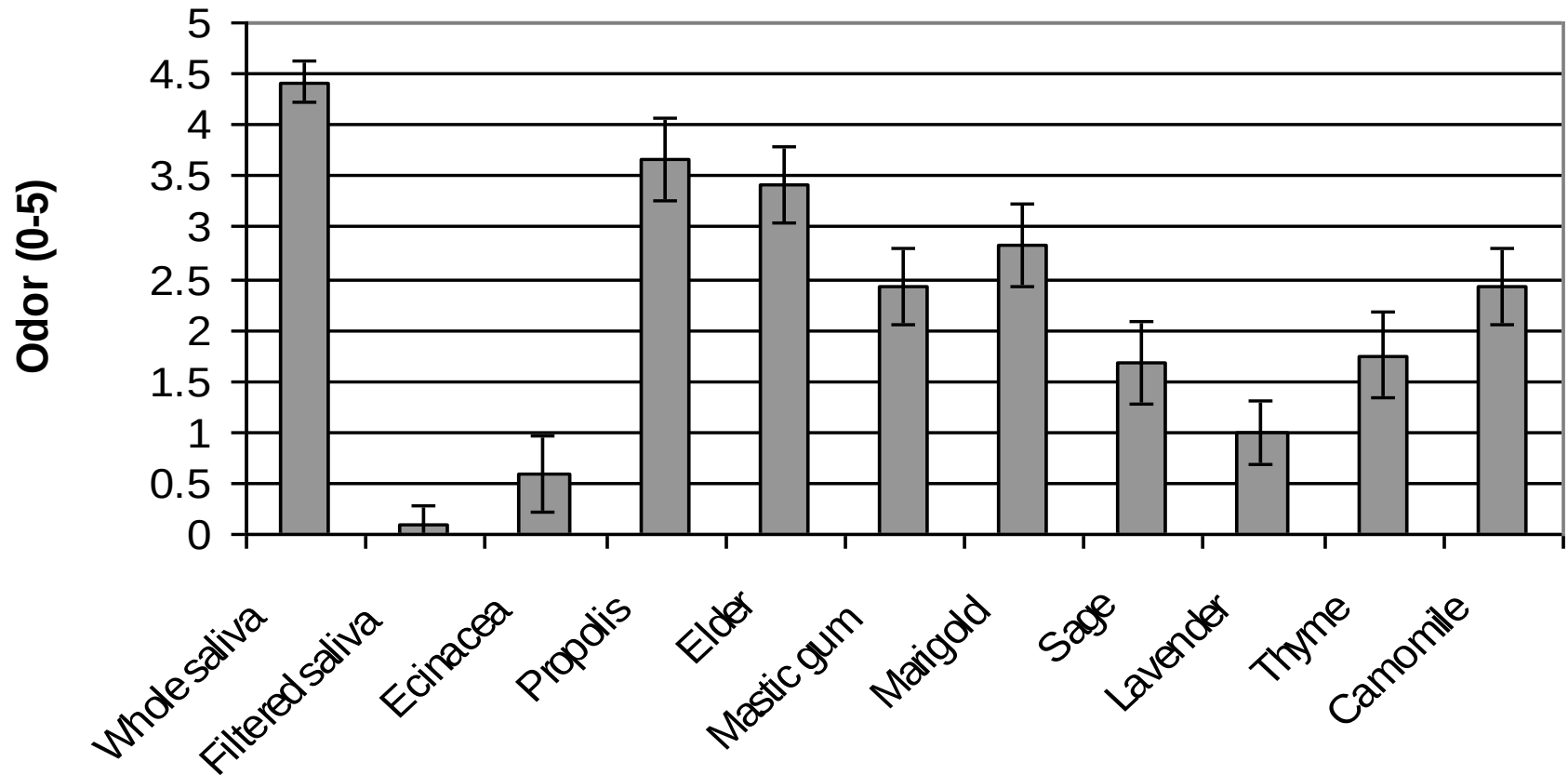
3. Bacterial metabolism inhibition

4. β -Gal inhibitor

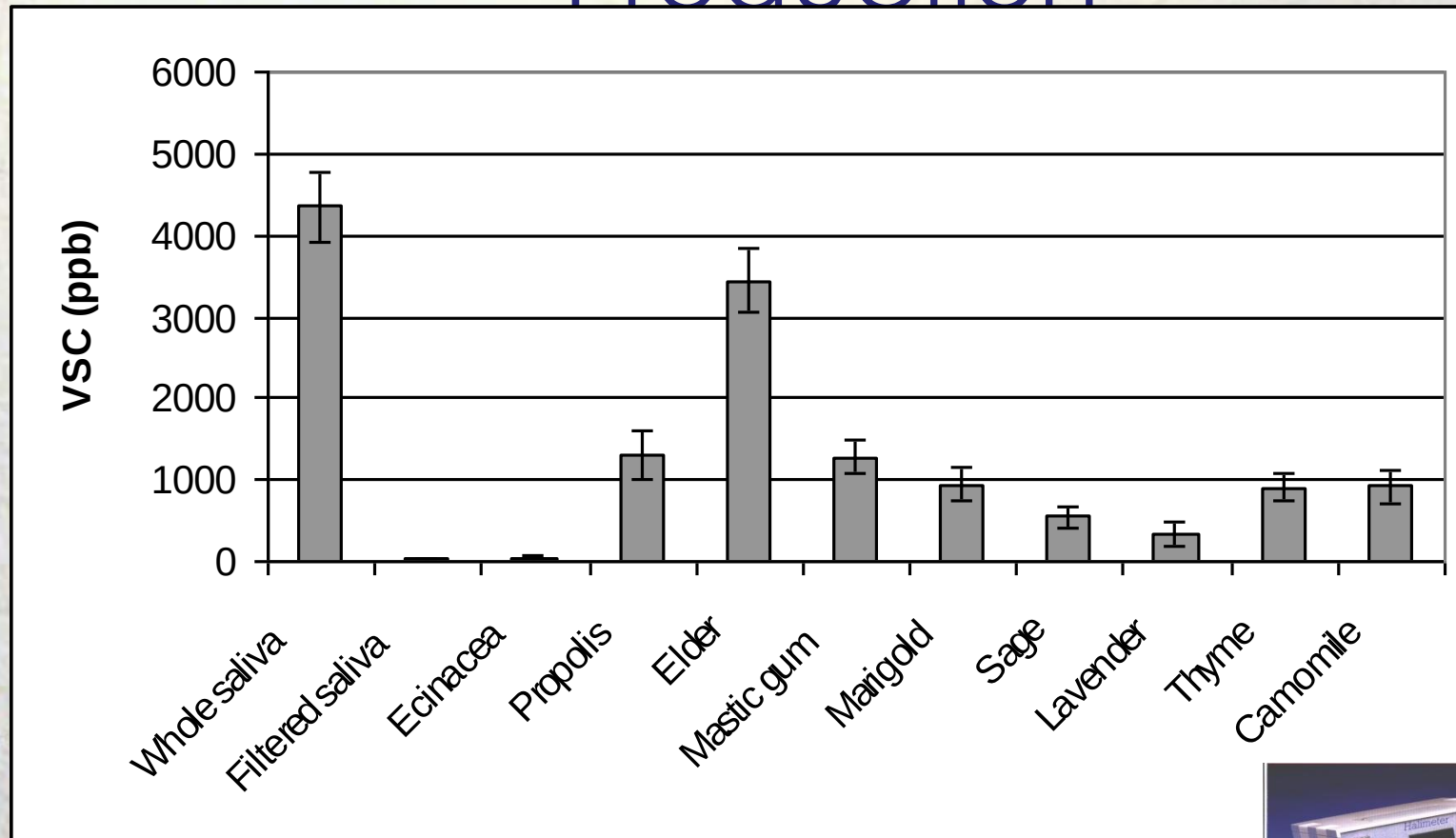
5. Proteolysis inhibition

6. VSC reduction (end-products)

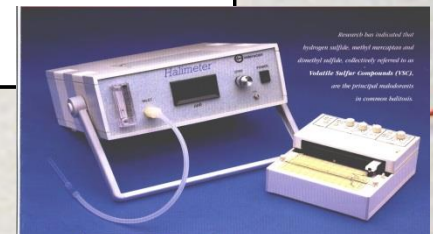
Effect of Various Natural Medicinals on Malodor Production



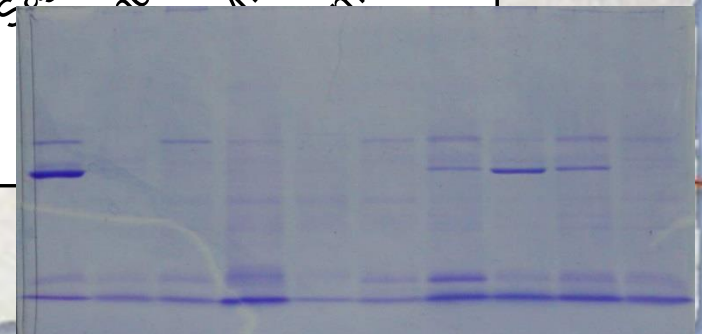
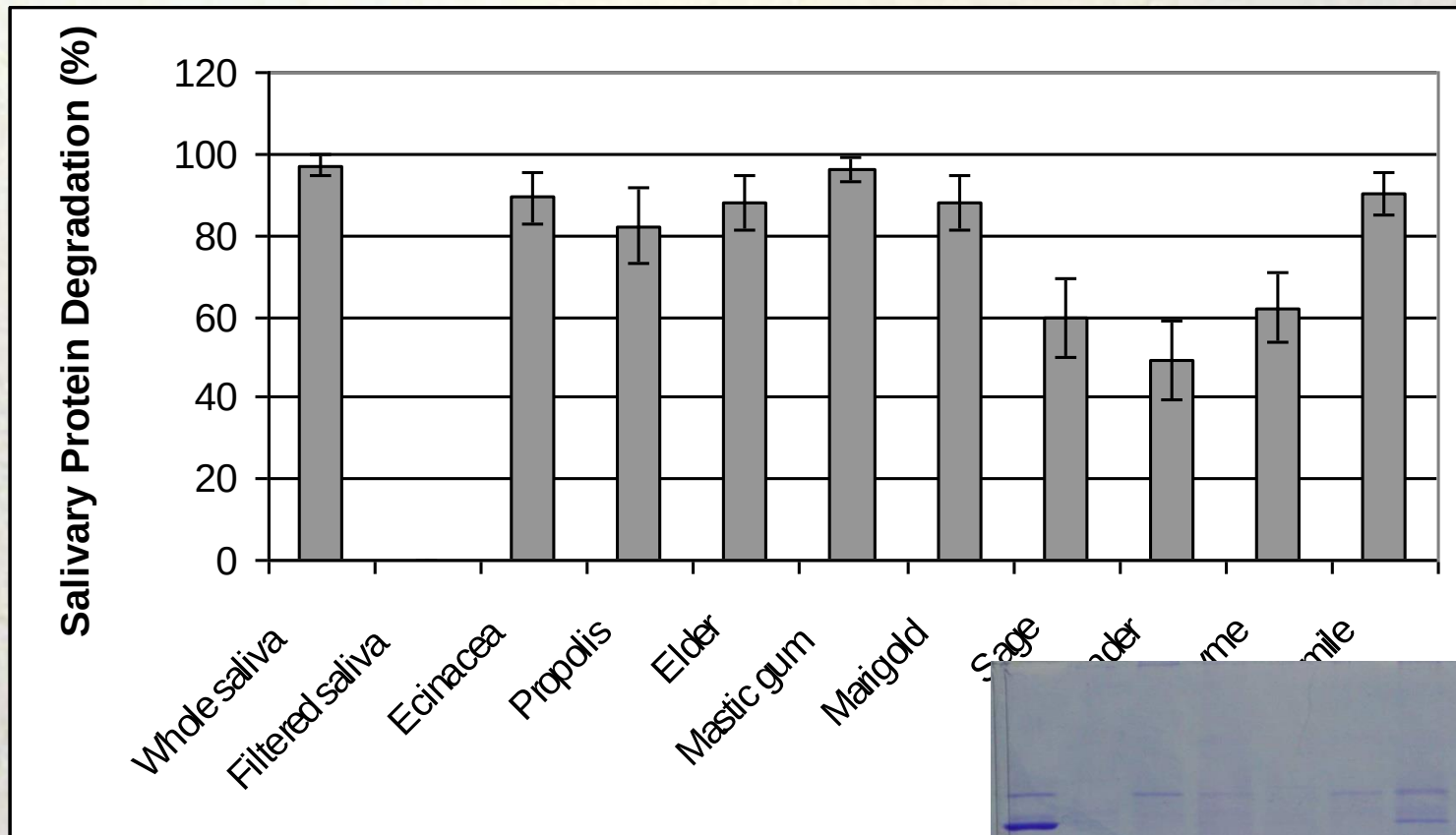
Effect of Various Natural Medicinals on Malodor Production



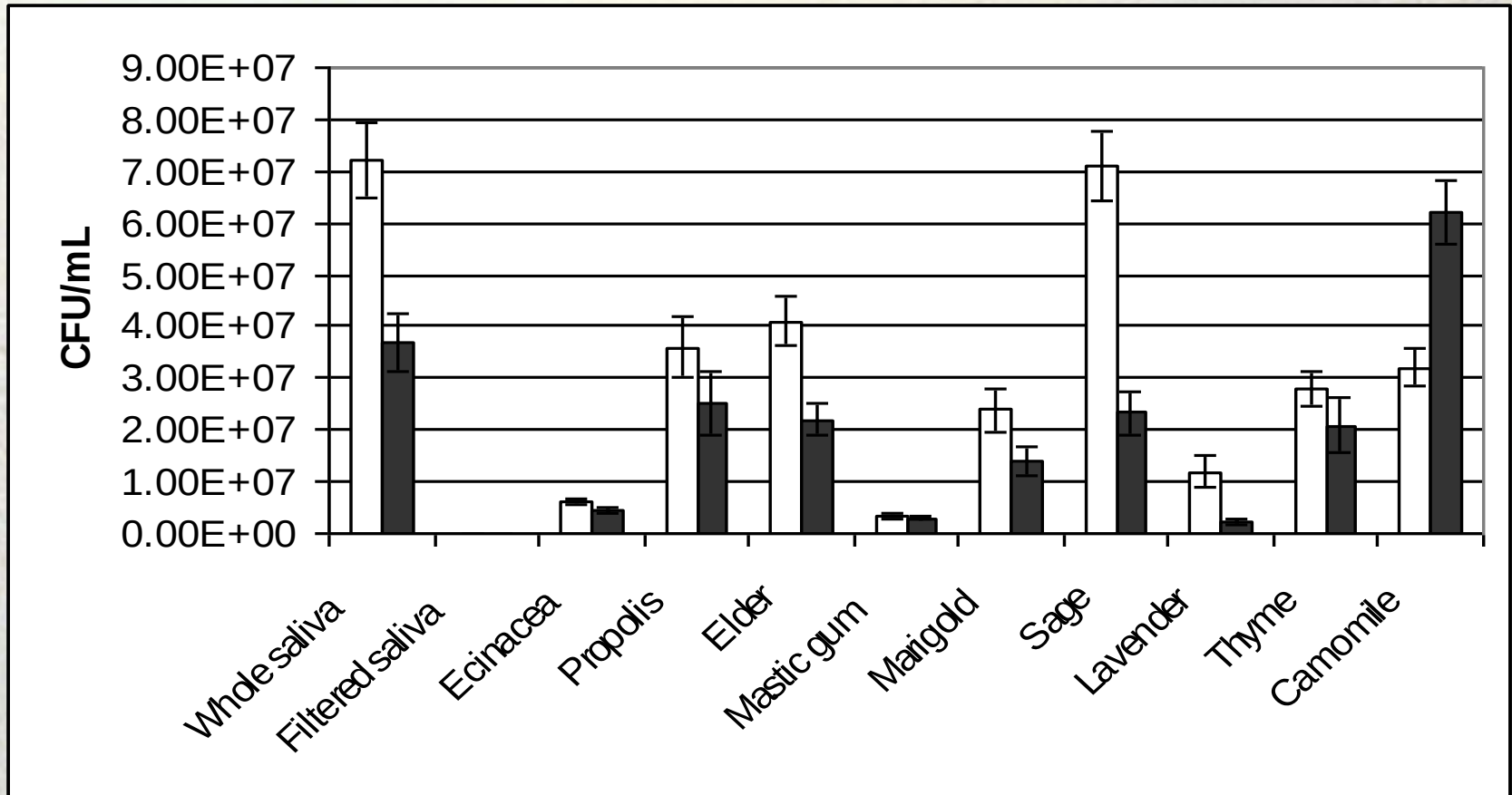
Sterer and Rubinstein, Quintessence Int, 2006



Effect of Various Natural Medicinals on Malodor Production



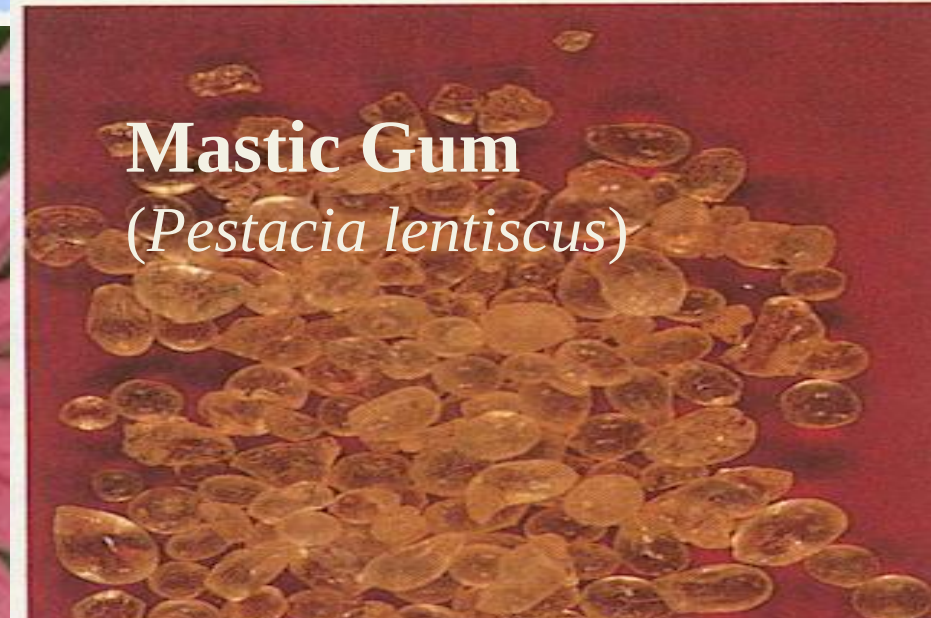
Effect of Various Natural Medicinals on Malodor Production



Echinacea
(*Echinacea*
augostifolia)



Mastic Gum
(*Pestacia lentiscus*)



Sage
(*salvia*
offcinals)

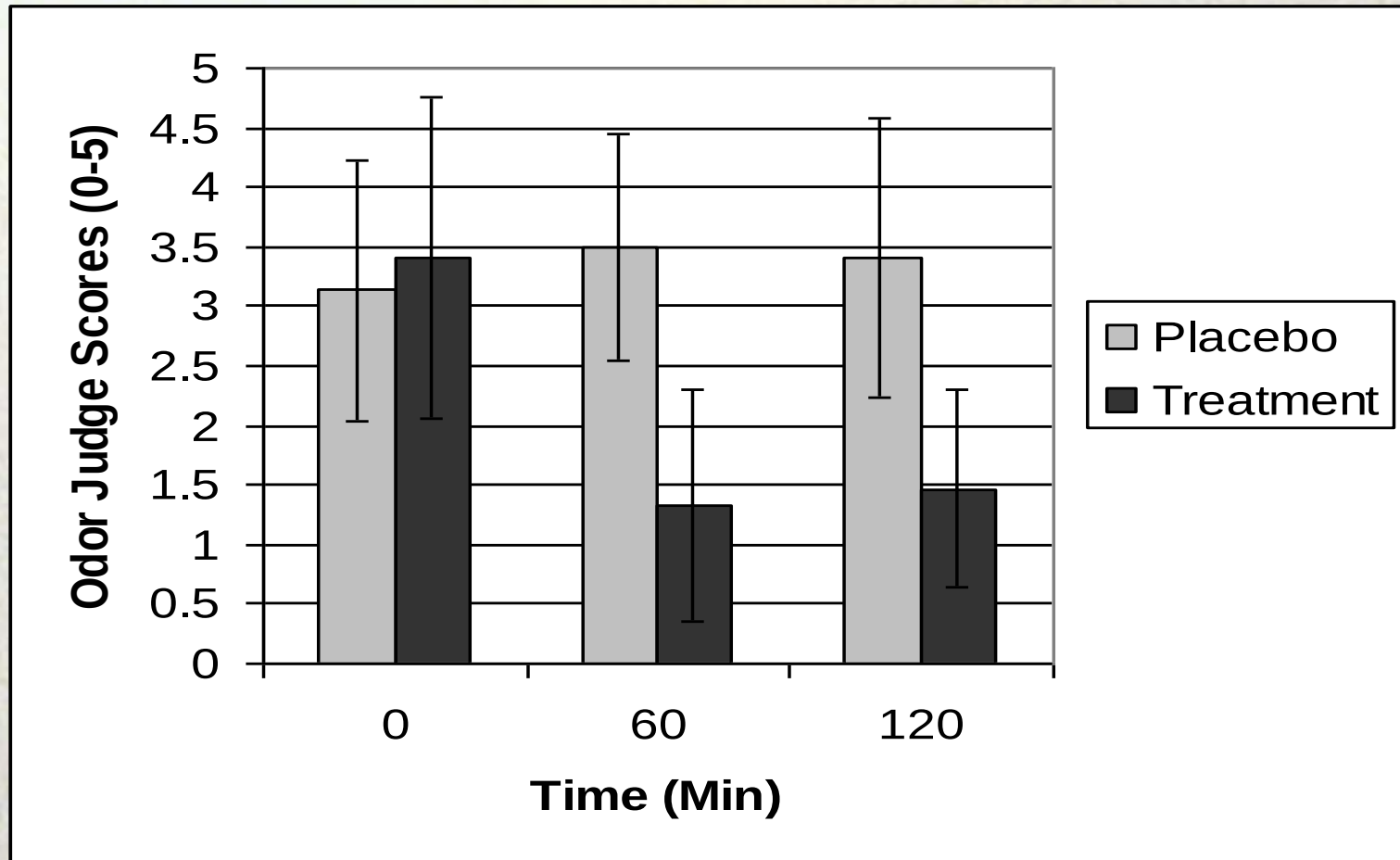


HORMIN DES PYRENEES

Lavender
(*lavandula*
augustifolia)

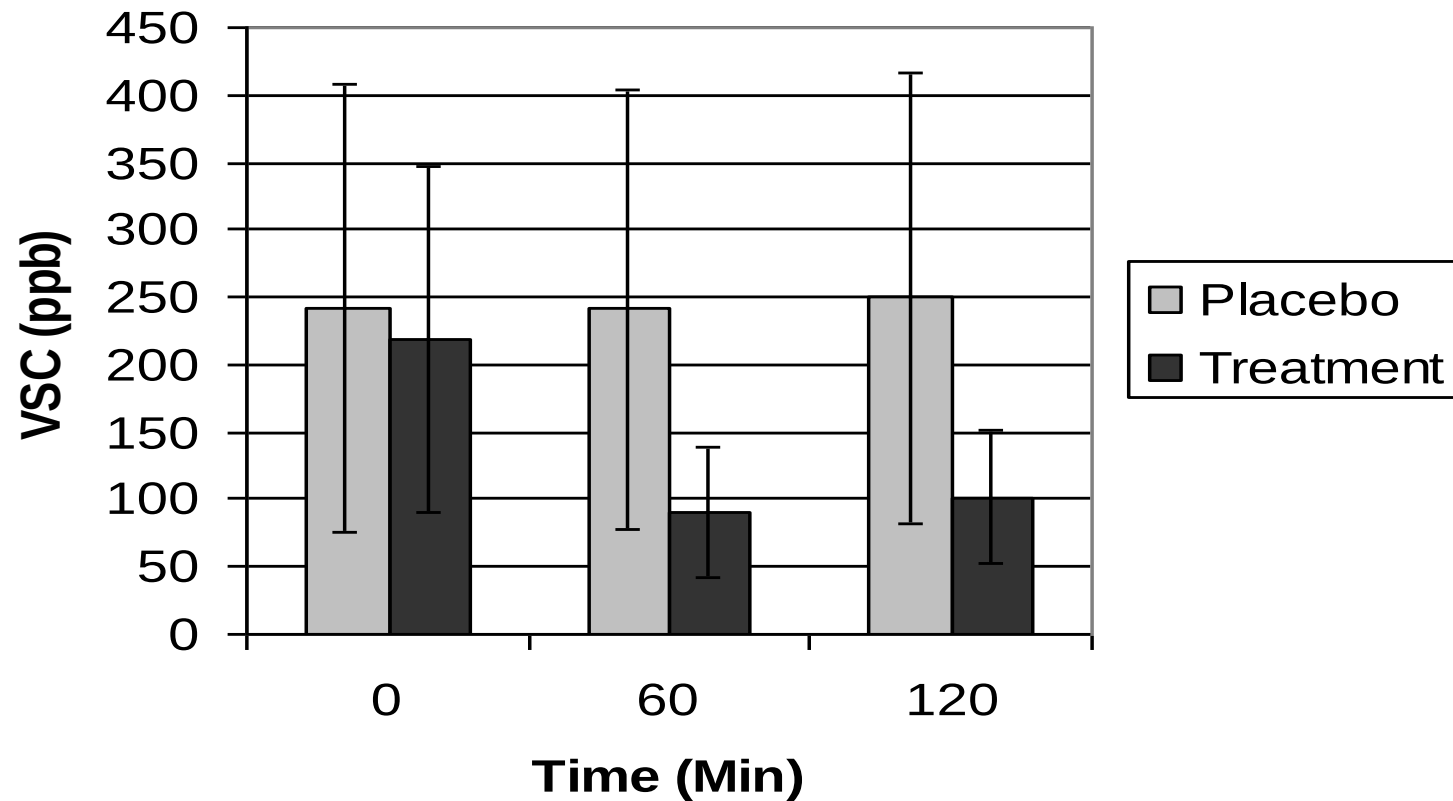


Malodor Reduction (I)



Sterer et al., *Journal of Dentistry*, 2008

VSC Reduction (I)



Sterer et al., *Journal of Dentistry*, 2008

Day Long Study

Day 1		Day 2	
Afternoon	Evening	Morning	Afternoon
Baseline ("Before treatment") measurements	1 st treatment application	2 nd treatment application	After treatment measurements

Day-Long action

Fig 1. Mean Odor Judge Scores

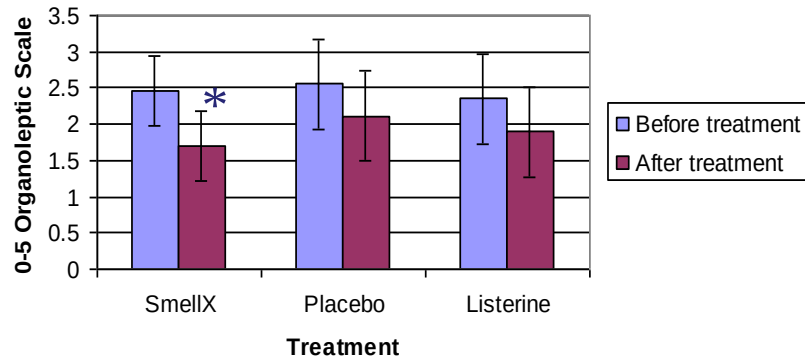


Fig 2. Volatile Sulfide Compounds (VSC)

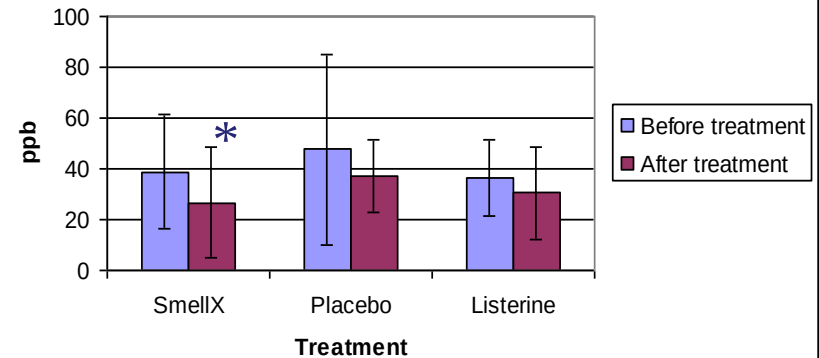
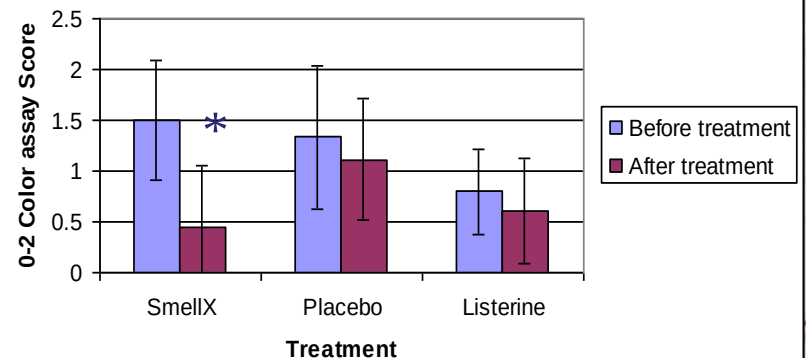


Fig 3. Beta-Galactosidase Activity



Smell Well (n=22)

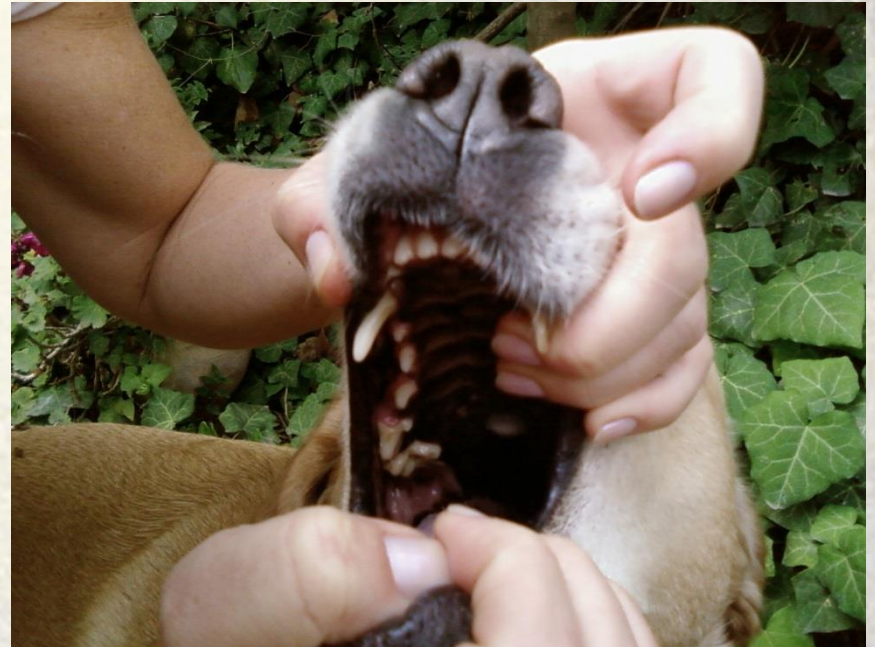
Placebo (n=9)

Listerine (n=10)

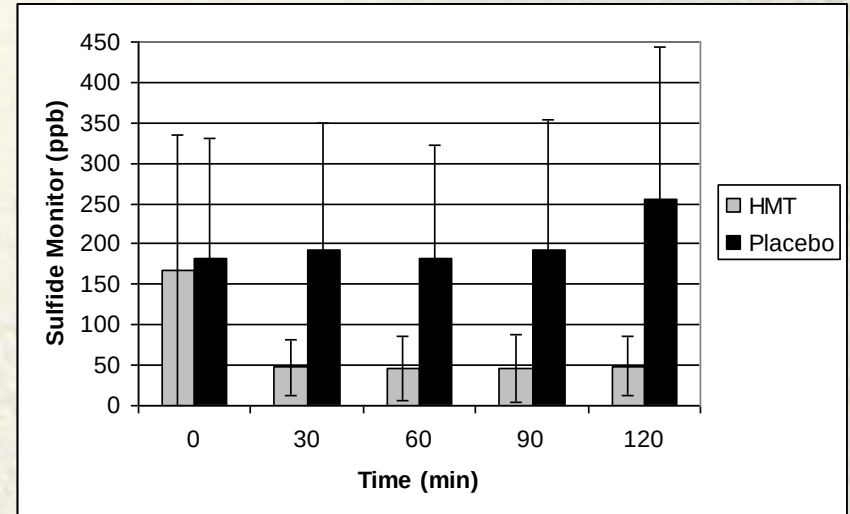
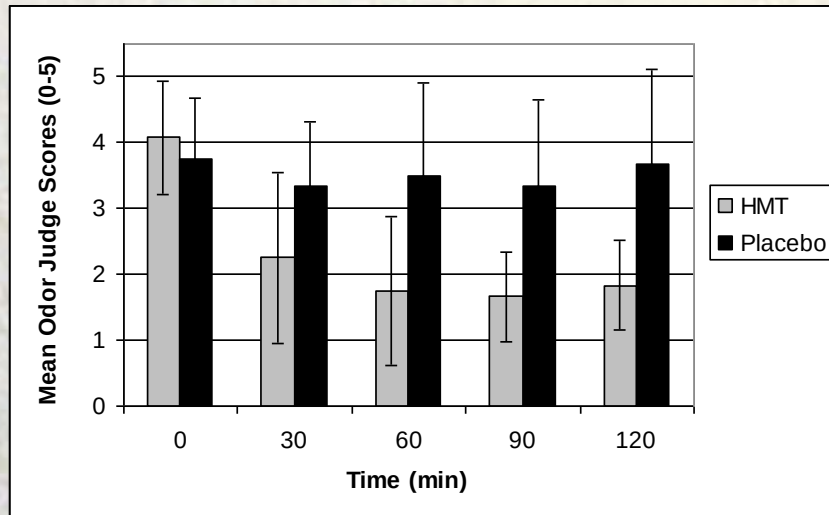
Dog Breath - Vet



Dogs Study



Dogs Study



Additional benefits

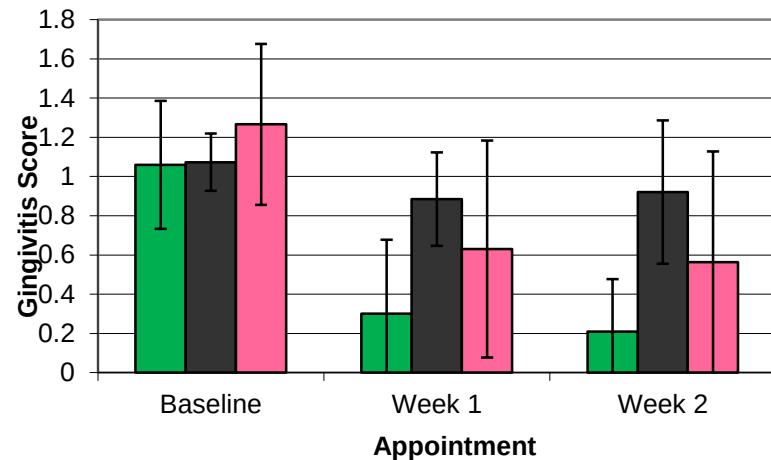


Gingivitis Study

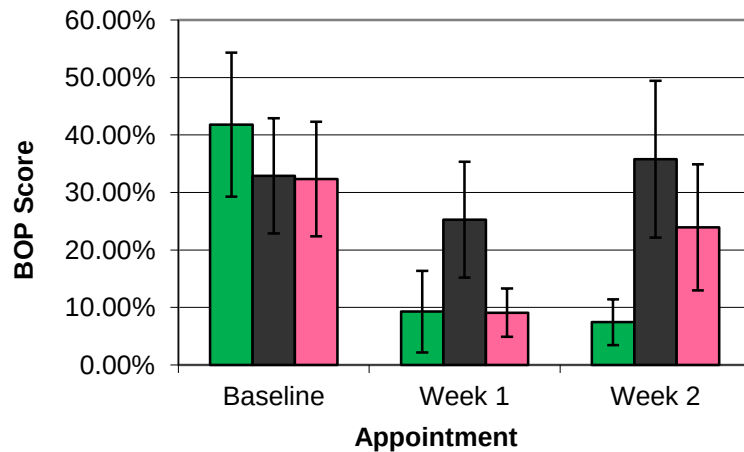
Day 1	Week 1	Day 8	Week 2	Day 15
Baseline measurements	Mouthwash or tablet application twice a day in addition to regular tooth brushing	First follow-up measurements	Regular tooth brushing only	Second follow-up measurements

Gingivitis reduction

Gingivitis Scores



Bleeding on Probing



■ Nova Breath (n=11)
■ Placebo (n=9)
■ CHX (n=10)

Future prospects

Split mouth
81 sites
13 patients
3m FU

