Aquafresh science academy

SCIENCE FOCUS RESOURCE

SCIENCE FOCUS ON...
ORAL MALODOR

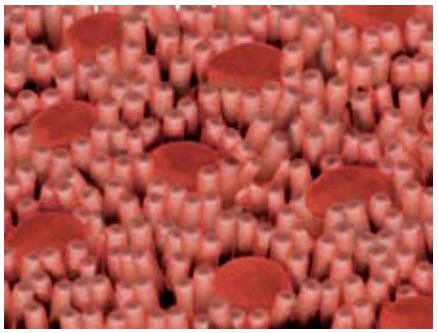
Whilst it is known that oral malodor (halitosis, or bad breath) is not an uncommon problem, clinical prevalence rates for oral malodor vary considerably:

- Soder et al's paper published in the Swedish Dental Journal (2000) found that in Sweden (n=840), severe oral malodor (foetor ex ore) prevalence in men was 2.4%.
- Published in *The Journal of Clinical Periodontology* (2006), Liu et al found the prevalence to be 27.5% in China (n=2000).
- Porter and Scully, writing in the *British Medical Journal* (2006), reported that in the developed world, 8–50% of people perceive that they have persistent recurrent episodes of oral malodor.
- Bosy et al's *Journal of the Canadian Dental Association* paper (1997) demonstrated that for up to 25% of adults, oral malodor is a severe, chronic complaint.

'...ascertaining definitive, objective, world-wide prevalence data is a difficult task'

Why is there such variation in these community-based trials studying the prevalence of oral malodor? One reason is that they have used different methodologies and outcome measures. Additionally, assessment of clinically significant oral malodor is a subjective response to the presence of unpleasant substances in the breath and therefore ascertaining definitive, objective, world-wide prevalence data is a difficult task.

The oral cavity, especially the dorsal tongue surface, harbours oral debris and bacteria



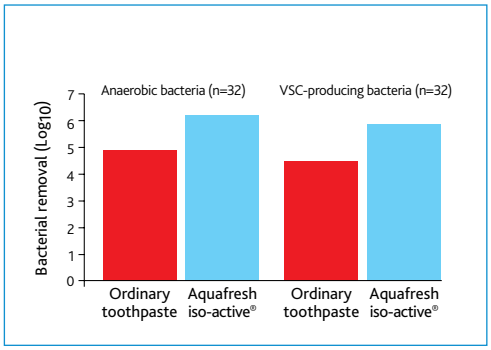
Management of oral malodor

Current management options for oral malodor include use of dentifrices that directly target the bacteria that cause oral malodor, use of tongue scraping or cleaning to remove bacteria on the dorsum of the tongue and treatment of periodontitis to prevent development of halitosis.

Use of dentifrices can significantly remove bacteria

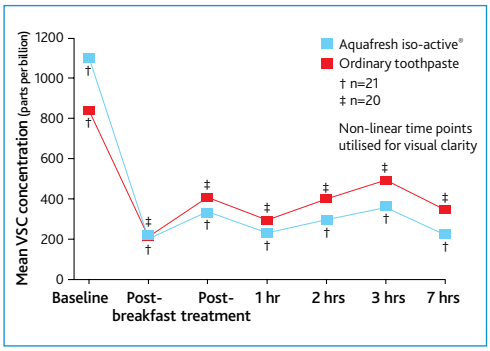
The oral cavity, especially the dorsal tongue surface, harbours oral debris and bacteria, which produce volatile sulfur compounds (VSCs) such as hydrogen sulfide, methyl mercaptan and dimethyl sulfide.

Figure 1:
Mean bacterial counts in expectorate after using ordinary* or Aquafresh iso-active® dentifrice



* Study compared Aquafresh iso-active® with a commercially available triclosan-containing gel dentifrice

Figure 2:
Total VSC concentration as a function of time**



** Study compared Aquafresh iso-active® with a commercially available triclosan-containing dentifrice

Bosma et al (*Archives of Oral Biology*, 2008) conducted a study to investigate the oral debris and bacteria removal efficacy of a gel-to-foam dentifrice (Aquafresh iso-active foaming gel) compared to a commercially-available dentifrice after brushing. The results showed that Aquafresh iso-active foaming gel removed significantly more bacteria from the oral cavity (figure 1). Newby et al (*Archives of Oral Biology*, 2008) found that Aquafresh iso-active foaming gel reduced VSC levels by up to 41% over a 7-hour period after brushing (figure 2).

'Aquafresh iso-active foaming gel reduced VSC levels by up to 41% over a 7-hour period after brushing'

Tongue scraping reduces malodor for a short time

The Cochrane Review authored by Outhouse et al (2006) and Seemann et al's *Journal of the American Dental Association* paper (2001) have shown that whilst tongue scraping or cleaning reduce VSC levels to a greater extent than tooth brushing (40%, 42%, and 30%, respectively); the benefits are short-lived, lasting only 30 minutes.

Periodontal disease and oral malodor

The relationship between periodontal disease and oral malodor is a subject of considerable debate. Writing in the *Journal of Periodontology* and the *International Dental Journal* respectively, Yaegaki and Sanada (1992) and Awano et al (2002) have shown that saliva from patients with periodontitis contains increased amounts of VSCs, whilst others report no direct association (Bosy et al, 1994; Zhu and Sha, 2002; John and Vandana, 2006 and Stamou et al, 2005).

Published in *The International Journal of Dental Hygiene* (2003) Danser et al suggest that patients with periodontitis have markedly increased tongue coating and it may be that the reported association between oral malodor and periodontitis is primarily due to the effects of tongue coating. For more information about bacterial load and tongue coating click here.

Periodontal treatment and malodor debate

Quirynen et al (*Journal of Periodontology*, 2005) conducted a double-blind, randomised study to investigate the effect of periodontal treatment on oral malodor. The results showed that in patients with moderate periodontitis, initial therapy, including tongue scraping, did not have a significant effect on the microbial load of the tongue and only had a weak impact on VSC level, except when combined with a mouth-rinse.

Further reading

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