Tongue-Cleaning Methods: A Comparative Clinical Trial Employing a Toothbrush and a Tongue Scraper

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**Background:** It is estimated that approximately 85% of all halitosis cases have their origin within the mouth; of these, 50% are caused by tongue residues. Previous studies have established that hydrogen sulfide and mercaptans are the primary components of halitosis. Thus, tongue cleaning gains importance as a means of halitosis management.

**Methods:** This investigation compared the efficacy of two mechanical methods for tongue cleaning through a handheld sulfide monitor. This crossover trial was carried out with 10 healthy subjects, 20 to 50 years old. Before the baseline measurement of the volatile sulfur compounds (VSCs), the subjects were instructed to refrain from any tongue cleaning method for 48 hours. The 10 participants were then placed in one of two groups (five each): 1) first week: tongue scraper, second week: soft-bristle toothbrush; 2) first week: toothbrush, second week: tongue scraper, with a 48-hour wash-out period between each week.

**Results:** The baseline measurements were compared with those of the end of each week using the Dunn method (α = 0.01). The tongue scraper showed a 75% reduction in VSCs, while the toothbrush only achieved a 45% reduction in VSCs.

**Conclusion:** Although the tongue coating was removed by both methods, the tongue scraper performed better in reducing the production of volatile sulfur compounds. *J Periodontol 2004;75:1009-1012.*
A cross-over study on the effect of various therapeutic approaches to morning breath odour.

Faveri M, Hayacibara MF, Pupio GC, Cury JA, Tsuzuki CO, Hayacibara RM.

Abstract

OBJECTIVE:

The aim of this study was to investigate the effect of tongue scraping and inter-dental flossing on morning bad breath in periodontally healthy subjects.

METHODS:

A four-step blind, cross-over study was conducted in 19 volunteers, divided into four groups: Group I: tooth brushing; Group II: tooth brushing and inter-dental flossing; Group III: tooth brushing and tongue scraping; and Group IV: tooth brushing, inter-dental flossing and tongue scraping. The volunteers performed these oral hygiene procedures three times a day for 7 days. Seven-day wash-out intervals were observed. Morning mouth breath was assessed organoleptically and by volatile sulphur compound concentrations.

RESULTS:

The highest mean organoleptic and volatile sulphur compound measurement values were found in the treatment groups in which tongue scraping was not performed and there were statistical differences between the two groups (p < 0.05). In the organoleptic evaluation (p > 0.05), inter-dental flossing did not show any statistical improvement in the effect of tongue hygiene on morning bad breath, but it significantly reduced the concentration of volatile sulphur compounds (p < 0.05).

CONCLUSION:

The findings suggest that tongue scraping appears to be the most important hygienic procedure to reduce morning bad breath in periodontally healthy subjects.
Morning breath odor: influence of treatments on sulfur gases.

Suarez FL, Furne JK, Springfield J, Levitt MD.

Source

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Abstract

We assessed the effects of several treatments on the concentrations of oral sulfur-containing gases, compounds thought to be responsible for morning breath. Upon awakening in the morning, healthy volunteers collected oral gas samples before and for eight hours after the following treatments: no treatment, brushing the teeth with toothpaste, brushing the tongue, rinsing with 5 mL of 3% hydrogen peroxide, breakfast ingestion, or swallowing two BreathAsure capsules. The gas samples were analyzed for sulfur-containing volatiles via gas chromatography. Baseline collections usually contained three sulfur gases: hydrogen sulfide, methanethiol, and dimethyl sulfide. The effectiveness of a treatment was determined via comparison of the areas under gas concentrations-time curves with and without treatment. Brushing the teeth or ingestion of BreathAsure had no apparent influence on the sulfur gases. Ingestion of breakfast and tongue brushing resulted in strong trends toward decreased sulfur gases. Hydrogen peroxide significantly reduced the sulfur gas concentrations for eight hours.
Effectiveness of mechanical tongue cleaning on oral levels of volatile sulfur compounds.

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Source
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Abstract

BACKGROUND:

Mechanical tongue cleaning may be an effective method for decreasing oral levels of volatile sulfur compounds, or VSC, and oral malodor. The authors conducted a study to compare the effectiveness of a specially designed tongue cleaner (One Drop Only Tongue Cleaner, One Drop Only, Berlin), a tongue scraper and a toothbrush in reducing oral VSC levels.

METHODS:

In this balanced, crossover study, 30 subjects had four morning appointments each with a waiting period of one week between appointments. At each appointment, a dental professional performed a single standardized tongue cleaning procedure using one of the cleaning tools. The authors monitored the subjects' oral VSC values using a portable sulfide monitor until their baseline VSC values were reached.

RESULTS:

The baseline values showed no significant difference between the three groups. The tongue cleaner and the tongue scraper (42 percent and 40 percent, respectively) reduced oral VSC levels more than the toothbrush (33 percent) did. Reduced VSC values could be detected significantly longer after using the tongue cleaner than after using the tongue scraper or the toothbrush. The authors, however, could not detect a significant VSC reduction for more than 30 minutes in any of the subjects.

CONCLUSIONS AND CLINICAL IMPLICATIONS:

The tongue cleaner, a combination brush and scraper, was slightly more effective in reducing oral VSC levels than were the tongue scraper and a regular toothbrush. Because of the limited duration of the effect, however, the clinical efficacy on the reduction of oral malodor remains questionable.
Oral malodor reduction by a combination of chemotherapeutical and mechanical treatments.

Farrell S, Baker RA, Somogyi-Mann M, Witt JJ, Gerlach RW.

Source

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Abstract

Bacterial proliferation and plaque accumulation on the surface of the tongue are major factors contributing to oral malodor. In this research, we used subjective and objective methods to evaluate the breath benefit of a triclosan-containing dentifrice (Blend-a-Med Complete Night) with and without tongue brushing in a randomized, examiner-blinded, three-period crossover clinical trial. Twenty-nine adults (mean age 40.2 years) with morning malodor were randomly assigned to a treatment sequence: triclosan dentifrice, triclosan dentifrice plus tongue brushing, and a control dentifrice (Crest Cavity Protection). The subjects used each product four times in 27 h with a 2-day wash-out period between treatments. Halimeter measurements were taken at baseline and at 3, 24 and 27 h. Subject questionnaire data assessing the breath quality were collected at 24 and 27 h. Both triclosan regimens showed significant improvement in oral malodor (p < 0.03) relative to the control. Significant (p = 0.035) malodor benefit was observed when tooth brushing with triclosan dentifrice was supplemented with tongue brushing. The triclosan dentifrice was associated with significant improvement (p < 0.05) in morning mouth feel and feeling of clean and fresh breath during the day relative to the control. There were no adverse events reported. The triclosan dentifrice was effective against overnight and daytime oral malodor. Supplementing routine brushing with tongue brushing resulted in additional breath improvement and breath benefits of the triclosan dentifrice were first-person noticeable
Reduction of malodor by oral cleansing procedures.

Tonzetich J, Ng SK.

Abstract

Organoleptic and gas chromatographic methods were employed to establish the threshold of odor objectionability of methylmercaptan and hydrogen sulfide and to assess the relative effectiveness of different oral hygiene measures to reduce the malodor to acceptable levels. The study showed that methylmercaptan and hydrogen sulfide concentrations below 0.5 ng. and 1.5 ng., respectively, are considered nonobjectionable. Gas chromatographic analyses indicate that these concentrations were exceeded in the early morning mouth air samples of approximately 50 per cent of the adult population studied. In these instances, methylmercaptan and hydrogen sulfide occurred in sufficiently high concentrations to account for the malodor. Brushing studies suggest that the early morning malodor arising from the oral cavity can be controlled by proper oral hygiene. The tongue was the major source of both offending compounds in the persons studied. Methods that involved cleansing of the dorsoposterior surface of the tongue caused the most pronounced reductions of both compounds. Since methylmercaptan was found to be more objectionable and to exhibit a lower threshold of objectionability, it was more difficult to reduce to acceptable levels.