A Clinical Study to Compare a Newly Designed Manual Toothbrush to a Commercially Available Manual Toothbrush for Treatment of Oral Malodor

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KEY CLINICAL RESULTS

The Oral-B® Advantage® Breath Refresh with Tongue Cleaner:

- Provided a statistically significantly more effective reduction in breath odor versus the Oral-B® Advantage® Plus toothbrush.
- Resulted in statistically significantly lower halimeter scores 3 hours post-brushing versus the Oral-B Advantage Plus toothbrush (p=0.001, combined 3-hr and 27-hr analysis)

OBJECTIVE

To compare the effectiveness of a newly designed manual toothbrush, Oral-B Advantage Breath Refresh, to a commercially available manual toothbrush for their ability to reduce volatile sulfur compounds (VSC) associated with oral malodor.

MATERIALS AND METHODS

- This was a single-center, examiner blinded, 2-treatment, 6-period, open label, cross-over study.
- Subjects were given acclimation products, Crest Cavity Protection and ADA manual reference brush, to use twice daily approximately 3 days prior to baseline visit and during washout periods.
- After a baseline halimeter breath measurement, subjects were randomly assigned to 1 of 2 treatments consisting of toothpaste and toothbrush:
  — Brushing teeth and cleaning tongue with the new Advantage Breath Refresh with Tongue Cleaner
  — Brushing teeth only with the Advantage Plus toothbrush
- Subjects brushed under supervision for 1 minute according to instructions immediately after the Baseline measurement. Subjects assigned to the Advantage Breath Refresh also cleaned their tongue.
- Follow-up halimeter breath measurements were taken 3, 24 and 27 hours post-baseline. Subjects were provided a timer, products and instructions for an unsupervised afternoon and evening brushing.
- Subjects returned the next morning for an overnight (24-hour post-baseline) halimeter measurement. Subjects brushed with their assigned product according to instructions immediately after halimeter measurement. Subjects assigned to the Advantage Breath Refresh also cleaned their tongue with the Advantage Breath Refresh tongue cleaner.
- A follow-up halimeter breath measurement was taken 3 hours post-brushing (27 hours post-baseline). This process was repeated until subjects completed all 6 periods according to their assigned sequence.
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- To prevent possible carry-over, there was a washout period (~ 45 hours) between test periods. During the washout periods, subjects brushed twice daily in their usual manner with Crest Cavity Protection and an ADA reference toothbrush.

RESULTS

- Baseline halimeter scores averaged 156.73 prior to using Advantage Breath Refresh and 157.87 prior to using Advantage Plus.
- Scores at 24 hours (after 3 uses of the assigned toothbrush) averaged 121.03 for Advantage Breath Refresh and 152.03 for Advantage Plus (p=0.002).
- For the average of the 3-hour and 27-hour scores, Advantage Breath Refresh averaged 107.81 and Advantage Plus averaged 130.77 (p=0.001).
- From the supplemental analysis, at 3 hours Advantage Plus averaged 131.70 and Advantage Breath Refresh averaged 115.20 (p=0.117) while at 27 hours Advantage Plus averaged 133.83 and Advantage Breath Refresh averaged 97.49 (p<0.001).
- No adverse events were reported.

CLINICAL COMMENT

Oral malodor, a common concern among patients, is caused by gram negative anaerobes that produce volatile sulfur compounds. A disproportionate amount of oral malodor is caused by bacteria residing on the tongue. Tongue scrapers have been shown to reduce oral malodor, but many patients may not want to add an additional product to their oral care routine. This study demonstrated the ability of a new toothbrush with a tongue cleaner to produce statistically significant reductions in oral malodor relative to a control toothbrush.