

The Effects of Two New Dual Zinc Plus Arginine Dentifrices in Reducing Oral Bacteria in Multiple Locations in the Mouth: 12-Hour Whole Mouth Antibacterial Protection for Whole Mouth Health

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Study objectives

To compare the effects of two Dual Zinc plus Arginine toothpastes to the effects of a fluoride control toothpaste in reducing bacteria in oral biofilm on teeth and in multiple soft tissue locations, as well as in saliva, 12-hours after 14- and 29-days of product use.

Trial conditions and methods

Products under investigation

Test dentifrice 1: zinc (zinc oxide, zinc citrate) 0.96%, 1.5% Arginine and 1450 ppm fluoride (Dual Zinc plus Arginine; Colgate-Palmolive Company, New York, NY)

Test dentifrice 2: zinc (zinc oxide, zinc citrate) 0.96%, 1.5% Arginine and 1000 ppm fluoride (Dual Zinc plus Arginine; Colgate-Palmolive Company, New York, NY)

Control dentifrice: regular fluoride dentifrice containing 1450 ppm fluoride (Colgate dentifrice; Colgate-Palmolive Company, New York, NY)

Methods

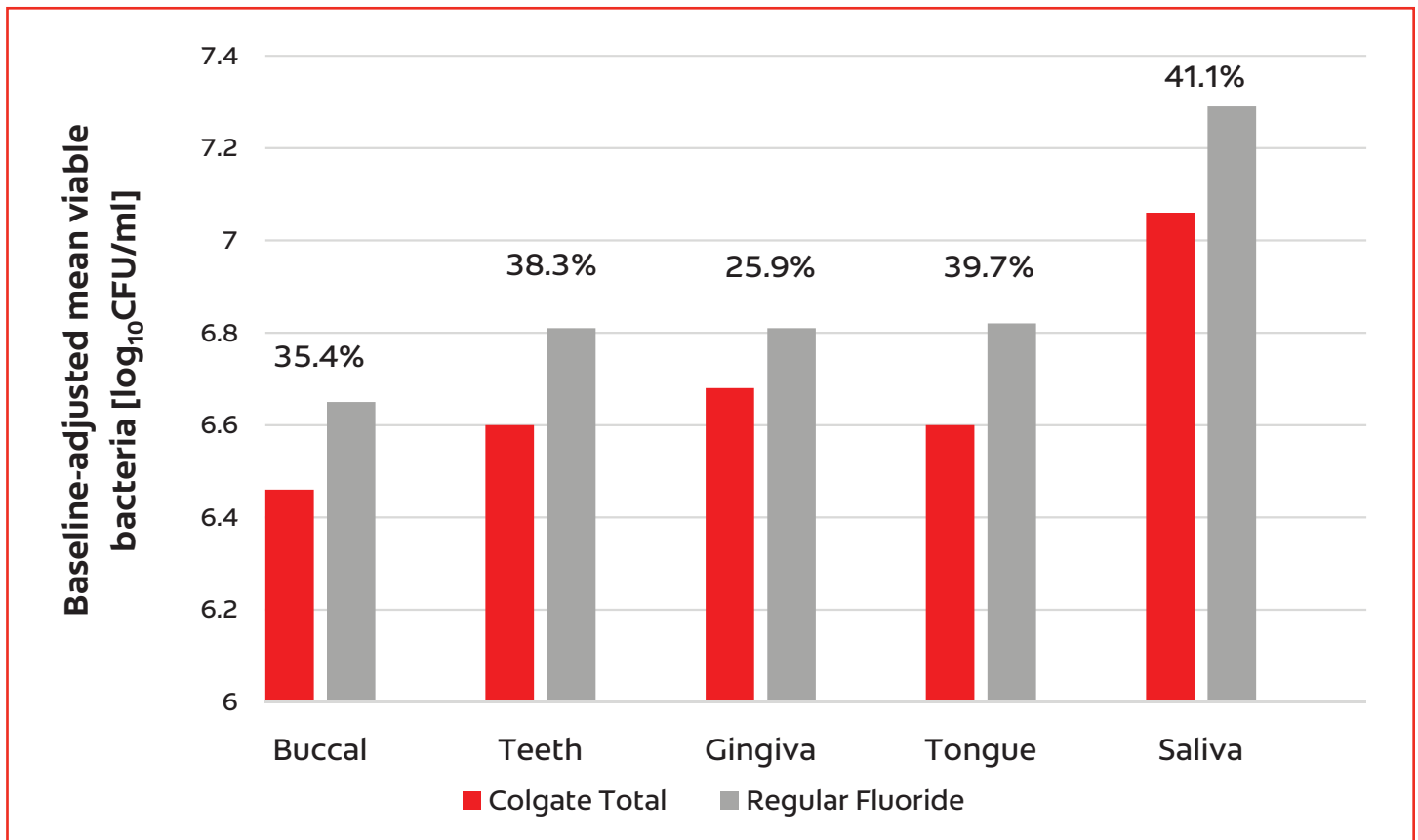
In this double-blind, parallel, single site study a total of 180 adult male and female subjects were randomly assigned to one of three study products and instructed to brush twice daily. Oral samples were collected from the teeth, tongue, oral buccal mucosa, gingiva and saliva at baseline and 12-hours after 14- and 29-days of assigned product use and were processed, serially diluted, plated, incubated and scored for viable bacteria. Statistical analyses were performed separately for each sample site using ANOVA and ANCOVA for within- and between-treatment comparisons, and all statistical tests of hypotheses were two sided and employed a level of significance of $\alpha \leq 0.05$.



Results

Similar results were seen after test products were used for 14 and 29 days with all measurements after 29 days of use being significantly different statistically from the control toothpaste. Relative to subjects in the Control Toothpaste Group, subjects using the Dual Zinc plus Arginine Toothpaste containing 1450 ppm F exhibited statistically significant reductions in bacteria on buccal (35.4%, $P < 0.001$), teeth (38.3%, $p < 0.001$), gingiva (25.9%, $p = 0.043$), tongue (39.7, $p = 0.001$) and in saliva (41.1%, $p < 0.001$) 12 hours after 29 days of product use. The results of the two Fieller confidence interval tests indicate that the two test toothpastes are clinically equivalent 12-hours after 14- and 29-days of twice daily use. Figure 1 illustrates the results, plotting across the relevant surfaces the effect on CFU and transformed $\text{Log}(\text{CFU}/\text{ml})$ reductions.

Figure 1. The effect on numbers of oral bacteria in five oral microenvironments, the teeth, tongue, cheeks (buccal) and gums (gingiva), as well as saliva



Conclusion

Toothpastes containing zinc (zinc oxide, zinc citrate) 0.96%, 1.5% Arginine and either 1450 ppm or 1000 ppm fluoride provide statistically significant reductions in oral bacteria on the teeth, tongue, cheeks and gums, as well as in saliva, compared to toothpaste with fluoride alone, 12-hours after 29-days of twice daily tooth brushing. The results demonstrate that these new toothpastes provide 12-hour antibacterial protection for whole mouth health.