Effect of Post-brushing Mouthwash Solutions on Salivary Fluoride Retention — Study 2

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Abstract

- **Objective:** This study evaluated the effects of three post-brushing mouthwashes containing 0 ppm F, 225 ppm F, and 500 ppm F, respectively, on salivary fluoride retention after brushing with 1450 ppm fluoride (as NaF) toothpaste and rinsing with water immediately after brushing.

- **Methods:** In this three-phase, randomized, cross-over study, an ion-specific electrode was used to measure salivary F levels in thirty trial participants before brushing (Time 0), and after brushing, rinsing with water, and then rinsing with one of the three mouthwashes. Time points evaluated after brushing were one, three, five, 10, 20, 30, 45, and 60 minutes. For saliva sample collections, subjects were asked to pool saliva in their mouths for 10 seconds before spitting out into a container for each of the time points.

- **Results:** The $\text{AUC}_{0-60}$ means for F in saliva were 554, 252, and 20 for the 500, 225, and 0 ppm F mouthwash groups, respectively. The 500 ppm F mouthwash resulted in a 2660% increase in total fluoride salivary retention over 60 minutes when compared with the 0 ppm F group, and a 120% increase when compared with the 225 ppm F group. A significant difference ($p < 0.001$) in the $\text{AUC}_{0-60}$ means between the three groups was observed using analysis of variance (ANOVA). Paired t-tests also showed significant differences in the mean fluoride retention over 60 minutes for all three pair-wise group comparisons ($p < 0.001$).

- **Conclusion:** Use of a fluoride mouthwash containing 225 ppm F or 500 ppm F produced a significant increase in salivary fluoride retention following brushing with a 1450 ppm F toothpaste and rinsing with water compared to rinsing without fluoride. The use of the 500 ppm F mouthwash may be of particular benefit to those at high caries risk.

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