



Fluoride Rinse

Case Study

Case Study: Remineralization of Enamel Using Fluoride Rinse

The purpose of this clinical study was to determine the effect of a fluoride mouth rinse on remineralization of enamel. Using a randomized 3x3 crossover design, participants received either a 100 ppm fluoride mouthrinse with essential oils (the test mouthrinse) 20 mL for 30 seconds, a fluoride nonessential oils mouth rinse (the positive control) or an essential oil nonfluoride mouth rinse (the negative control) twice daily for 14 days. All study subjects (n=153) had a mandibular removable partial denture upon which two partially demineralized human enamel specimens were mounted.

The specimens were assessed for mineral content change and fluoride uptake using surface microhardness, testing and enamel fluoride analysis. Of the 153 subjects enrolled in the study, 125 (82%) subjects were evaluated at the end of the study. The results after two weeks showed that percentage of SMH recovery was 42 percent in the test group, 36 percent in the positive control group and 16 percent in the negative control group. The fluoride uptake was 19 micrograms per square centimeter, 16 $\mu\text{g}/\text{cm}^2$ and 3 $\mu\text{g}/\text{cm}^2$ for the test mouth rinse, positive control and negative control groups, respectively.

These findings demonstrate that a fluoride containing essential oil mouth rinse with 100 parts per million fluoride is effective in promoting enamel remineralization and fluoride uptake. Further, the combination of fluoride and essential oils in a mouth rinse may



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enhance the already established antigingivitis efficacy of essential oils rinses by providing anticaries benefits.

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