



High Fluoride Toothpaste

Case Study

Case Study: Prevention of Root Caries Using High Fluoride Toothpaste

The progression of root caries may be prevented by fluoride; however, the differing effect of varying concentrations of fluoride is unknown. The purpose of this study was to compare the effects of a 5,000 ppm fluoride toothpaste, and a 250 ppm fluoride mouth rinse on demineralized human dentin surfaces. Dentin samples were obtained from the cervical surfaces of 45 extracted teeth. After being sterilized by radiation, 15 samples were attached to an intraoral appliance worn by one subject 24 hours a day for three weeks. The appliance was immersed in one of three solutions: 1) a 5000 ppm sodium fluoride toothpaste slurry (1 part water and 3 parts toothpaste and water); 2) 10 ml mouth rinse or; 3) 10 ml distilled water for 60 seconds once daily.

A reference surface was created on each specimen by sealing half of the surface with a self-etching adhesive system. For each test cycle, one volunteer wore an intraoral appliance with 15 specimens inserted and worn for 24 hours a day, over a period of three weeks. . The dentin specimens were randomly assigned to one of the three groups, 5000 ppm fluoride toothpaste (Duraphat), 250 ppm fluoride mouth rinse (Meridol) and distilled water (negative control). The appliance was immersed daily in one of the three agents for 60 seconds. Samples were assessed for lesion depth



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(μm) and mineral loss (vol. % \times μm) by transversal microradiography. Statistically significant differences for mineral loss and lesion depth were found between the toothpaste and the mouth rinse as well as between the toothpaste and the control group, but not between the mouth rinse and the control group. This preliminary study demonstrated that a high fluoride toothpaste may be more effective than fluoride varnish in preventing progression of dentinal caries. Given the inherent limitations on this study design these results should be considered as preliminary.

For more information contact:

Dr. Bizhang: mozhgan.bizhang@med.uni-duesseldorf.de

Dr. Yong-Hee P Chun - [ychun@umich.edu](mailto:y Chun@umich.edu);

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