Effects of Two Fluoride Gels on Fluoride uptake and Phosphorus Loss During Artificial Caries Formation

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Blocks of human enamel were cycled through a demineralization - F-treatment-remineralization procedure and then analyzed for fluoride and the presence of caries-like lesions. Treatments with a sodium fluoride gel (5000 ppm F) increased the enamel fluoride concentration to 6500 ppm F, whereas a stannous fluoride gel (1000 ppm F) increased enamle fluoride to about 1200 ppm F. Although a control treatment (water) allowed caries-like lesions to form, as observed by microradiography, no lesions were found in either of the fluoridetreated groups.

When the experiement was repeated with radioactive teeth, mineral loss, as determined by release of 32p, was again greatest in the water-treated control group, but some loss was observed in the fluoride treatment groups. The least loss was found in the sodium fluoride group.

It was concluded that the fluoride treatments not only increased enamel resistance but also enhanced remineralization so that calcium phosphate was replaced during the subsequent remineralization phase. Because of the probability that stannous ions were deposited during the stannous fluoride treatments, some of the apparent calcium phosphate re-deposition in this group was probably stannous compounds.

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