

Effect of Amine/Sodium Fluoride Rinsing on Toothbrush Abrasion of Softened Enamel in situ

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Key Words

- Erosion
- Fluoride rinsing solutions
- Intraoral exposure
- Toothbrush abrasion

Abstract

The aim of this study was to test the effect of fluoride rinsing on the prevention of toothbrush abrasion of softened enamel in situ. For softening, the samples were immersed in 0.1 M citric acid (pH 3.5) for 3 min. Eight test subjects had to make 5 runs in which 4 slabs per run were attached to intraoral appliances. They were as follows: (1) no softening, no fluoride rinsing (control 1); (2) softening, no fluoride rinsing (control 2); (3) softening, rinsing in situ with a sodium/amine fluoride rinsing solution (250 ppm F) for 30 s; (4) rinsing in situ with the sodium/amine fluoride rinsing solution (250 ppm F) for 30 s, softening; (5) softening, rinsing in situ with an experimental amine fluoride-containing rinsing solution (250 ppm F) for 30 s. After exposure for 60 min to the oral milieu, the volunteers brushed the samples for 30 s with toothpaste and the loss of tooth substance was determined. For each test person, the secretion rate of resting and paraffin-stimulated saliva, buffering capacity and pH were measured. Toothbrush abrasion in situ was not significantly lower using the fluoride rinsing

solutions before or after softening the enamel compared to no rinsing ($p > 0.05$). Multiple linear regression analyses revealed that 57% of the variation in toothbrush abrasion could be attributed to the severity of softening ($p < 0.001$) and the pH of stimulated saliva ($p < 0.001$). It was concluded that a single rinse for 30 s had no statistically significant effect on the prevention of toothbrush abrasion of softened enamel.

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