Title: Anti-erosion potential of fluoride solutions associated with aminomethacrylate copolymer: in situ randomized crossover study

Abstract: The anti-erosion potential of fluoride solutions associated with aminomethacrylate (AMC) was evaluated in the presence of acquired pellicle on enamel and dentin. Twelve volunteers installed an intraoral device containing bovine enamel and dentin specimens. Afterwards, they performed the mouthwash (1 min) with one of the solutions: Water (C); Fluorine (F, 225ppm F^-); Stannous Chloride (S, 800ppm Sn^{+2}); AMC (2%); FS; AMC+F; AMC+FS and remained with the device for film maturation (30 min). Specimens were immersed in 0.03% HCl, pH 2.3, 3 min extra orally. These steps were repeated 6 times. Each solution was tested in one phase with the same volunteers (2 days apart). At the end of the cycle, a microbiopsy was performed to read the concentration of calcium and phosphorus in the acid collected by the colorimetric method in a spectrophotometer. The data obtained were converted into erosive loss values (µm) considering the stoichiometric formula of hydroxyapatite. The concentration of fluorine soluble in KOH (µg/cm²) on the surface of the specimens was also determined. Data were analyzed with RM-ANOVA and Tukey (5%). Considering the calculated erosive loss in enamel, the AMC+F solution showed the best performance ($p < 0.001$). On dentin, AMC+F and AMC+FS solutions were statistically superior ($p < 0.001$). The results of KOH-soluble fluoride concentration in enamel were: C = S = AMC < F < AMC+F ≤ AMC+FS ≤ FS and in dentin: C = S = AMC < F = AMC+F = AMC+FS < FS. It is concluded that AMC was able to increase the anti-erosion potential of fluoride solutions in the presence of acquired pellicle.

Keywords: *Tooth erosion; Dental enamel; Polymers; Sodium fluoride.*