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In Situ Comparison of Conventional Fluoride and 'Remineralizing' Toothpastes

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Well controlled *in situ* studies have proven to be useful tools in the anticaries assessment of various toothpaste formulations. In fact, *in situ* studies are often required by the American Dental Association (ADA) when manufacturers submit data packets in applying for the ADA's Seal of Acceptance for a particular formulation. The aim of this *in situ* study was to determine the relative fluoridating ability of a new `remineralizing' toothpaste (Enamelon) formulated with sodium fluoride (NaF), calcium and phosphate compared to a conventional NaF toothpaste which is considered to be the clinical `gold standard' (Crest®) in anticaries efficacy. A conventional Denture Chip (*in situ*) Model which is considered an ADA validated model system was used for this assessment. Thirty (30) panelists were fitted with two partially demineralized enamel specimens in appliances specially fabricated for these types of studies. The study was a three way crossover design, with each panelist randomly assigned either A) 250ppm F (NaF) dose response control toothpaste; B) the `remineralizing' toothpaste, containing 1100ppm F (NaF) plus added calcium and phosphate; or C) the conventional toothpaste, containing 1100ppm F (NaF). All toothpastes were formulated with silica abrasives. After 1 month of product use, panelists returned to the clinic. Specimens were removed for analysis, new specimens were inserted, and the panelist assigned one of the other two products. After three sets of product use were completed, data (Fluoride Uptake) were averaged for each group using a repeated-T analysis. Fluoride uptake values ($\mu g/cm^2$) for each group were: A) 10.7 ± 4.8; B) 14.7 ± 9.4; C) 22.7 ± 15.4, with C>B>A at $p<0.05$. **Using the Proskin, Chilton, Kingman (PCK) criteria for determining if a new product "is as good as" a clinically proven benchmark, the new `remineralizing' toothpaste fails to meet the definition of a product that is "as good as" the current "gold standard" in promoting enamel fluoride uptake.**