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3261 Effects of Children Toothpastes on Enamel Caries Using Two Models

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Aims/objectives: To compare, using two pH-cycling models, the de/remineralization effects of children's toothpastes on primary teeth. Design: In vitro single-section and pH-cycling models. Methods: Primary teeth were placed in demineralizing solution for 96 hours to produce artificial carious lesions 60-100 ƒŶm deep. They were cut into100ƒŶm thick sections and assigned to 6 groups. Sections in Groups A and D were exposed to a non-fluoridated toothpaste, those in Groups B and E to half-pea-sized (0.16 grams) and those in Groups C and F to pea-sized portions (0.32 grams) of a 500ppm F toothpaste. pH-cycling Model I (Groups A, B, C), without added fluoride, ran for 7 days, while Model II (Groups D, E, F), with 0.25ppm F, ran for 10 days. Results: Lesions were evaluated using polarized light microscopy and microradiography. The lesions increased in depth by 64% in Group A, 70% in Group B, and 20% in Group C. For Model II specimens, those in Group D increased by 88% and those in Groups E and F by 61% and 23% respectively. ANOVA and Bonferroni comparison tests revealed that Groups A and B were significantly different from Group C ($p<0.001$). However, no significant difference existed between Groups A and B ($p>0.05$). Similarly, the results obtained from Model II showed no significant difference between Groups D and E ($p>0.05$). However, there was a statistically significant difference when Groups D and E were compared with Group F ($p<0.001$). Conclusions: Both 10-day and 7-day pH-cycling models were suitable for studying carious lesion progression in primary teeth (the demineralizing and remineralizing solutions of the 10-day cycling model contained 0.25ppm F). A pea-sized portion (0.32 grams) of 500ppm F toothpaste could slow down the demineralization progression better than a half-pea-sized portion.

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