

EFFECT OF VARIOUS FORMS OF CALCIUM IN DENTAL PRODUCTS ON HUMAN ENAMEL MICROHARDNESS *IN VITRO*

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Abstract. The aim of this *in vitro* study was to compare the remineralization potential of dental products containing calcium on human enamel softened by soft drinks. Fifty sound human premolar teeth were randomly divided into 5 treatment groups ($n=10$): artificial saliva, 1,000 ppm fluoride toothpaste, CPP-ACP paste, CPP-ACP with 900 ppm fluoride paste and tricalcium phosphate with 950 ppm fluoride paste. All specimens were immersed in cola soft drink and artificial saliva for 10 cycles of 5 seconds each; this procedure was repeated twice at six-hour intervals. All specimens were remineralized by treatment with the dental products mentioned above for 5 minutes and kept in artificial saliva at 37°C for 6 hours. The surface microhardness of the enamel was measured with a Vickers hardness tester (100 grams, 15 seconds) at baseline, after erosion and after remineralization. Comparison of the mean microhardness numbers within groups was made by one-way repeated measures ANOVA and between groups with the one-way ANOVA with a level of significance of $p<0.05$. The mean surface microhardness in all groups decreased significantly after being eroded by the soft drink and increased after treatment. After remineralization treatment, the mean surface microhardness of the artificial saliva group was significantly less than the other groups. The CPP-ACP paste, CPP-ACP with 900 ppm fluoride paste and tricalcium phosphate with 950 ppm fluoride paste treatments all increased the hardness of the teeth *in vitro*.

Keywords: CPP-ACP, erosion, fluoride, microhardness, soft drink, tricalcium phosphate

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