Comparative evaluation of the effects of human breast milk and plain and probiotic-containing infant formulas on enamel mineral content in primary teeth: an in vitro study.

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Abstract

AIM:
This study quantitatively investigated the changes in enamel mineral content of primary teeth after immersion in human breast milk and plain and probiotic-containing infant formulas.

METHODS:
Thirty-six sound primary anterior teeth were collected and assessed for mineral content (calcium and phosphorus content in wt%) using scanning electron microscope attached with energy-dispersive X-ray analyser (SEM-EDXA). In order to create a microbial-induced caries model, the enamel surfaces of the teeth were inoculated with mutans streptococci and then each tooth was randomly assigned to one of three groups: human breast milk, plain infant formula or probiotic-containing infant formula (n=12) each. Teeth were then soaked in the designated type of milk, and the solutions were replenished every day for 1 week after which the mineral content was measured again using SEM-EDXA. Wilcoxon signed-rank test was used to study the changes by time within each group, and the significance level was set at P0.05.

RESULTS:
Treatment of enamel surface with breast milk has significantly increased mean Ca wt%, while no significant changes were detected in mean P wt%. On the other hand, when primary teeth were soaked in plain or probiotic-containing infant formulas, both mean values of both Ca and P wt% significantly decreased.

CONCLUSIONS:
In conclusion, whereas breast milk might confer some protective effect against enamel demineralisation, infant formulas whether plain or supplemented with some probiotics might promote loss of minerals from enamel surface.

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