

EFU #524

FINAL REPORT

TITLE

A Study to Evaluate the Effect of a Fluoride Foam Upon Enamel Fluoride Uptake

PURPOSE

The purpose of this study was to observe the effect of a fluoride foam (supplied by Laclede Research Laboratories) upon enamel fluoride uptake.

PROCEDURE

1. Thirty-six bovine teeth were selected and labial enamel specimens were prepared from each tooth as follows:
 - a, smoothed with 100 grit sandpaper on the lapidary wheel;
 - b, smoothed with 600 grit sandpaper on the lapidary wheel;
 - c, etched for 30 seconds with 2N HClO₄; and
 - d, polished with a ragwheel and flour of pumice-distilled H₂O slurry (3:2).
2. The specimens were divided into groups of twelve and treated under the following conditions:
 - a. Specimens and treatment regimens were preheated to 37°C.
 - b. Specimens were treated by immersing the respective specimens in their assigned treatment regimen for 4 minutes with gentle agitation.

CONCLUSION

Both fluoride products were significantly more effective than deionized water; in promoting enamel fluoride uptake into sound enamel however, they did not differ significantly from each other.

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3. The treatment groups were as follows:

<u>GROUP</u>	<u>SPECIMEN</u>	<u>TREATMENT</u>
1	1-12	Deionized Water
2	13-24	Fluoride Foam #L26323A
3	25-36	Nupro APF Gel #4L4498

4. Each specimen was rinsed immediately with distilled water after treatment.

5. Following the treatments, the specimens were placed in 1 N KOH saturated with Calcium Phosphate Tribasic overnight on the constant immersion wheel (6 specimens per bottle) to remove loosely bound calcium fluoride.

6. Following the 1 N KOH immersion period all the specimens were rinsed with distilled water, windowed (31.65 mm²) and one enamel layer was removed by decalcification in 3 ml of 0.5 N HClO₄ for 5 seconds.

7. The decalcification solutions were analyzed for fluoride and calcium using accepted methods (i.e. fluoride ion electrode and atomic absorption spectrophotometry).

RESULTS

The results of this study are summarized in the attached table.

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SUMMARY OF DATA

GROUP	TREATMENT	MEAN POST-TREATMENT	
		ppm F	depth
1	Deionized Water	374 ± 38*	1.16 ± 0.12
3	Nupro APF Gel #4L4498	4333 ± 318	** 1.08 ± 0.14
2	Fluoride Foam #L26323A	4210 ± 332	0.80 ± 0.07

* Standard Error of the Mean

** Values within brackets do not differ significantly
(p < 0.05) as determined by Least Significant Difference analysis.

Reference: OHRI Book #259, Page 106
OHRI Book #253, Page 185

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