

# In Vitro Root Caries Remineralization by NovaMin® Dentifrices

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**Objective:** To assess the potential of NovaMin® (calcium sodium phosphosilicate) dentifrices to remineralize root caries in an in vitro remineralization/demineralization (remin/demin) model.

**Methods:** Bovine tooth roots were sectioned, mounted in epoxy, and progressively ground and polished to expose the dentin layer. Caries-like lesions were pre-formed in the dentin samples by immersion for 96 hours in demineralization solution (pH = 4.52) at 37°C. Randomly-selected samples were pulled after lesion formation and did not go through the remin/demin cycle. The remaining samples were subjected to a 7-day remin/demin cycle that consisted of a twice-daily 30-minute soak in demineralizing solution (pH=4.52, 37°C) followed by a two-minute dentifrice treatment (soak in 1:3 slurry with DI Water). Samples were soaked in artificial saliva (pH=7.00, 37°C) between the two daily demineralization/treatment periods. Treatment groups were: A) Lesion Only, B) DI Water, C) 1000ppm F as NaF (Crest®), D) 5000ppm F as NaF (ControlRx®), E) 5% NovaMin®, and F) 5% NovaMin® + 5000ppm F as NaF. Surface microhardness (Knoop, HK) was measured on all samples using a load of 100 grams for 20 seconds.

**Results:** Data were not normally distributed and so were analyzed using the appropriate non-parametric statistical tests (ANOVA on Ranks and Student-Newman-Keuls). All HK data are presented as median (mean±S.E.M.) with n=18. Results were: A) 16.85 (18.13±0.77), B) 16.61 (18.32±1.31), C) 16.16 (16.59±0.66), D) 14.43 (14.83±0.80), E) 22.69 (23.18±1.70), and F) 24.84 (24.76±1.53) with E = F > A = B = C = D (p<0.01). Treatment with NovaMin®-containing dentifrices resulted in a hardening of the lesions during the 7-day remin/demin cycle.

**Conclusion:** Preliminary data indicate that NovaMin®-containing dentifrices (both with and without fluoride) have the potential to remineralize caries-like lesions on root tissue at a higher rate than fluoride dentifrices alone. These results will need to be confirmed by clinical studies.

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