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# ***In-Vitro Antimicrobial Properties of a Bioactive Glass (NovaMin®) Containing Dentifrice***

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**Objective:** The objective of this study was to determine the antimicrobial properties of a bioactive glass (NovaMin®) containing dentifrice against a number of common oral pathogens, and to compare these to a commercial fluoride dentifrice.

**Methods:** *S. mutans* (ATCC # 25175), *S. sanguinis* (ATCC # 10556), *F. nucleatum* (ATCC # 10953) and *A. naeslundii* (ATCC # 19039) were used in this study. The bacteria were grown in DE broth to a concentration of at least 10<sup>6</sup> CFU/ml. A non-aqueous base (glycerin) was used to formulate the bioactive glass containing dentifrices. NovaMin® was added in either 3% w/w or 10% w/w. A commercial, fluoride dentifrice was used as a control. The test articles were diluted 1:3 in distilled water, and the bacterial colonies were inoculated with the test articles. Two minutes after inoculation, aliquots were taken and plated on Brain Heart Infusion Agar for 3 to 7 days, depending on the organism to be counted. Viable CFU's were visually counted. All experiments presented represent the average of three replicates.

**Results:** The log reduction in viable CFU 's for the NovaMin® containing dentifrices (both 3% and 10% w/w) and NovaMin powder ranged from 4.5 log against *F. nucleatum* to 8.3 log against *S. sanguinis*. Log reduction of CFU's against *A. naeslundii* was 6.0 log for the NovaMin dentifrices, and 6.6 log for the NovaMin powder. By comparison, the log reduction in CFU from the commercial fluoride dentifrice was only 1.1 log against *A. naeslundii*, 1.3 against *F. nucleatum*, 1.4 against *S. mutans* and 3.0 against *S. sanguinis*. All three NovaMin formulations were significantly more effective at reducing bacterial count than the commercial fluoride dentifrice.

**Conclusion:** These tests demonstrate a strong anti-microbial effect of bioactive glass particulate in a dentifrice formulation. These compounds may prove useful in maintaining optimal oral health.