

# Laboratory Evaluation of StaiNo® Interdental Brushes for Stain Removal and Abrasivity

## OBJECTIVE

The primary objective of this study was to compare the stain removing ability of nylon interdental brushes containing aluminum oxide (alumina) - StaiNo brushes - to standard nylon interproximal brushes without alumina.

The secondary objective of this study was to evaluate the effect of the StaiNo interdental brushes containing alumina on natural tooth enamel: the degree of scratching (if any) as compared to standard nylon interdental brushes.

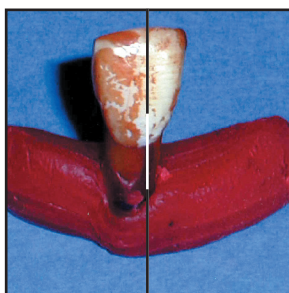
## RESULTS

### A. Stain Removal

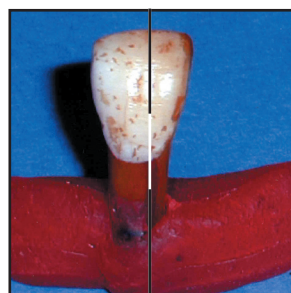
Visual examination revealed that the StaiNo brush removes coffee and tea stains at a rate about double that of the control brush. For example, the amount of stain removal achieved by the StaiNo brush at 100 strokes was about the same as the standard brush at 200 strokes. This result was consistent for all the stained teeth evaluated. Photographs (Figures 2a, 2b and 2c) showing the results of a tea stain are typical of the findings for all the teeth tested.



Baseline  
Figure 2a



Standard      StaiNo  
100 Brush Strokes  
Figure 2b

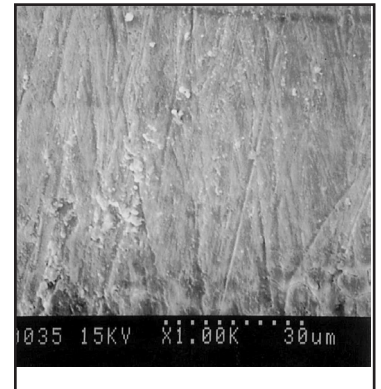


Standard      StaiNo  
200 Brush Strokes  
Figure 2c

### B. Scratching of Tooth Surface by the Brushes

There is no evidence of scratching produced by the StaiNo brush or the standard brush after 200 brush strokes when observed using a stereomicroscope at 10x and 25x magnification.

SEM evaluation at 1000x magnification revealed small scratches on the surface of the natural tooth enamel resulting from the alumina containing brush. These scratches were approximately the same size as those produced using a fine abrasive prophylaxis paste (See Figure 3b).



Surface Of Natural Tooth Enamel  
(1000x)  
Figure 3b

Neither the StaiNo brush nor the standard brush produced scratches on tooth enamel that were visible with the unaided eye or at 25x using the stereomicroscope.

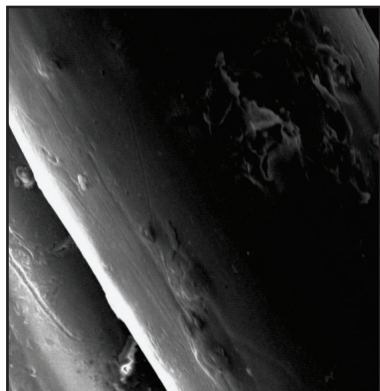
## CONCLUSIONS

There is an observable difference between a the new StaiNo interdental brush and a standard control nylon interdental brush in the ability for stain removal from extracted natural teeth. The rate of stain removal of the StaiNo brush is approximately twice that of the standard nylon brush.

The new StaiNo brush produced small scratches on the surface of the natural tooth enamel. These scratches were approximately the same size as those produced using a fine abrasive prophylaxis paste. Neither the StaiNo brush nor the standard brush produced scratches on tooth enamel that were visible with the unaided eye or at 25x using the stereomicroscope.

# Clinical Evaluation of StaiNo® Interdental Brushes for Stain Removal and Abrasivity

Stains in the embrasures and interproximal spaces between teeth can be difficult to remove using standard toothbrushes and standard interdental brushes. A new interdental brush with a polishing agent incorporated in its nylon bristles, StaiNo, has recently been introduced. A four-week clinical study was conducted by this author at UMDNJ – New Jersey Dental School to evaluate the efficacy of stain removal using the StaiNo brushes vs. standard nylon interdental brushes. Fifty subjects participated in this randomized double blind, stratified, two-treatment clinical trial.



SEM Micrograph (500X) Of StaiNo Nylon Brush Bristle Containing Abrasive Polishing Particles

## PROTOCOL

1. Subjects were chosen who had at least three cleansable anterior interproximal spaces (six proximal tooth surfaces). They were balanced into two groups, having “moderate” or “heavy” stain on their teeth.
2. The brushing regimen was as follows: Subjects were instructed to brush interproximally without a dentifrice twice per day for the duration of the study, after first brushing with their usual toothbrush and toothpaste. Used brushes were discarded and a new brush was used each day. Twenty-five subjects used the StaiNo brush and twenty-five subjects used the control nylon brush.
3. A modified Lobene Stain Index (Lobene, JADA, 1968,V.77, pp.849-55) was used to determine the area and intensity of interproximal stain after 2 weeks and 4 weeks of use. Digital imaging was used to document the amount of stain present.

## RESULTS

1. The StaiNo brush removed stain significantly better than the control.
2. The StaiNo brush removed 21% of the stain after 2 weeks and 34% of the stain after 4 weeks.
3. There were no adverse reactions found by direct oral tissue examination for the duration of the study, nor were there any adverse reactions reported by the subjects.
4. The StaiNo brush removed stain similarly (at the same rate) for both moderate and heavy stains.

## CONCLUSION

The results of this study show that the StaiNo interdental brush is significantly more effective at removing stain from the interproximal areas of anterior teeth than the standard nylon control brush.

Studies conducted at:

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