

Poster Presentation - Research Supported by P&G

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448 Clinical Comparison of High-adhesion Whitening Strips and Professional Laser-assisted Whitening

J. SIMON¹, K.A. KING¹, L. POWELL¹, N. WILSON¹, E. CONDE², M.K. ANASTASIA², J. CARSON², and S. FARRELL².
¹University of Tennessee, Memphis, TN, ²Procter & Gamble, Mason, OH.

Objectives: A randomized, examiner-blinded clinical trial was conducted to compare efficacy and safety of 9.5% hydrogen peroxide high-adhesion whitening strips and in-office laser-assisted whitening procedure (LaserSmile™, Biolase, USA). **Methods:** A total of 59 healthy adult volunteers with no history of prior bleaching and no tooth sensitivity were randomized to one of the two treatments: 9.5% hydrogen peroxide high-adhesion whitening strips used 30 min, 1/day for 20 days (take-home strips) or in-office laser-assisted whitening procedure conducted in a single visit according to manufacturer's recommendations (in-office laser+gel). Efficacy was measured objectively as L*a*b* color change using digital images of the maxillary anterior teeth at Baseline and Day 21. **Results:** The average age of study participants was 37 ranging from 19 to 61, and 66% were females. Treatment groups were balanced at Baseline on tooth color and demographics ($p \geq 0.4$). At Day 21, both groups demonstrated significant mean yellowness reduction (Δb^*) and brightness improvement (ΔL^*) relative to Baseline. Additionally, the take-home strip group showed significantly ($p < 0.02$) greater tooth color improvement relative to the in-office laser+gel group at Day 21 with the adjusted mean (SE) Δb^* of -2.18 (0.12) and -1.25 (0.15) for the take-home strips and in-office laser+gel groups, respectively, and the adjusted mean (SE) ΔL^* of 1.98 (0.13) and 1.41 (0.18) for the take-home strips and in-office laser+gel groups, respectively. Both products were well-tolerated, no subject discontinued treatment due to an AE. **Conclusion: Use of 9.5% hydrogen peroxide take-home whitening strips resulted in superior tooth whitening compared to an in-office laser-assisted whitening procedure.**

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3557 Development of a Dentin Smear Layer Grading Scale

R. VON KOPPENFELS¹, H. GOETZ², H.J. DUSCHNER², D.J. WHITE³, M. ZSISKA³, Y. SHI³, J. GRUNER³, and J. ZOLADZ³.
¹Applied Structure- and Microanalysis, Mainz, Germany, ²Applied Structure and Microanalysis, Mainz, Germany, ³The Procter & Gamble Company, Mason, OH.

The measurement of dentine smear layer integrity is important to the assessment of treatment effects toward limiting hypersensitivity. **Objectives:** This study examined the potential for development of a histomorphological based scale for the evaluation of smear layer integrity in laboratory assessments of dentin surface passivation. **Methods:** Human third molars had crowns removed to reveal coronal dentin. Tubuli were exposed with acid etching and specimens were hand brushed for 10 minutes with slurry (33 % w/w) of NaF silica toothpaste. A group of post treated specimens were saved and additional groups were subjected 16 hours (50 %) saliva washing. A quantitative scale (0-5) was developed using a combination of surface histomorphological methods including confocal laser scanning microscopy (CLSM) and variable pressure scanning electron microscopy (VP-SEM). All specimens were subject of a three step analysis sequence: CLSM (50x, air), VP-SEM (2000x, 10 kV) and VP-SEM (2000x, 20 kV). The quantitative grading index decreases with the number of blocked tubuli. Images with intact smear layer in all visualization methods were evaluated with the highest score 5. Typical dentin etched surface became index 0. **Results:** CLSM, and VP-SEM showed that NaF dentifrice temporarily sealed dentin tubuli through brushing actions. Following saliva washing the layer formed by NaF was debried to varying degrees. Quantitative evaluations on the histomorphology scale revealed: Pre-treatment 0.0 (0); Post Brushing 3.08 (± 0.58); Post Washing 2.0 (± 0.78) ($p < 0.05$ Students t). **Conclusions: Studies of smear layer dynamics are important in development of improved treatments for the amelioration of dentinal hypersensitivity. The quantitative evaluation of smear layers through histomorphological assessment may be useful for the pre clinical evaluation of prospective treatments. The smear layer histomorphology scale (SLHS) described here was able to differentiate smear layer development and loss following topical treatments with abrasive dentifrice.**