

Thursday, March 10



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Clinical Study of Barrier Usage in Peroxide-Based Tooth Whitening

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Objective: While the new paint-on liquids or gels may start at relatively high peroxide concentrations, the absence of a barrier may limit peroxide residency (contact time) for vital bleaching. A clinical study was conducted to specifically evaluate the contribution of a barrier to tooth whitening. **Methods:** 33 adults were randomly assigned to the paint-on gel group (no barrier) or paint-on gel+barrier (barrier) group. All subjects used Colgate® Simply White™ (18% carbamide peroxide) twice a day over a 7 day period. The “no barrier” group followed the manufacturer’s instructions for the paint-on gel, while the “barrier” group placed a blank polyethylene whitening strip containing no gel or peroxide over the paint-on gel after its application. Efficacy was measured objectively as $L^*a^*b^*$ color change using digital images at Days 2, 5 & 8. **Results:** For the no barrier group, adjusted mean \pm SE Δb^* (yellowness) was 0.01 ± 0.42 at Day 2, -0.20 ± 0.16 at Day 5, and -0.15 ± 0.19 at Day 8. Color change was greater in the barrier group. Adjusted mean \pm SE Δb^* was -0.25 ± 0.11 at Day 2, -0.79 ± 0.15 at Day 5, and -1.08 ± 0.19 at Day 8. Only the barrier group differed significantly ($p < 0.05$) from baseline beginning at Day 2 and again thereafter. Although both groups used the same 18% carbamide peroxide paint-on gel, between-group comparisons demonstrated significant color improvement (Δb^*) with the barrier strip at Day 5 ($p = 0.015$) and Day 8 ($p = 0.002$). Both treatments were well tolerated. **Conclusion: In clinical research, application of a strip barrier over an 18% carbamide peroxide gel resulted in a significant improvement in tooth whitening compared to use of that paint-on gel without any barrier isolation.**

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Clinical Whitening of Dentifrice and Paint-On Gel Versus Tray Control

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Objective: This research was conducted to evaluate the clinical effectiveness of two direct-to-consumer whitening products and a positive control. **Methods:** Data from two randomized clinical trials having common entrance criteria were conducted to evaluate a paint-on gel containing 18% carbamide peroxide (Colgate® Simply White™), a dual-phase whitening dentifrice (Crest® Vivid White™) without carbamide peroxide, and a 10% carbamide peroxide, tray-based, positive control (Opalescence®). Subjects were given manufacturer instructions for use. In each trial, whitening was measured objectively on the maxillary anterior teeth via digital image analysis using well-established and standard methods for $L^*a^*b^*$ color change. A meta-analysis was conducted using the pooled raw data from the two clinical trials. Mean change in b^* and L^* were separately analyzed using a general linear model. **Results:** The pooled sample included 83 subjects with mean (SD) age of 36 ± 14 . Following 2 weeks of use the adjusted mean (SE) for Δb^* was $-1.83 (0.12)$ for the positive control group, $-0.16 (0.12)$ for the dual-phase dentifrice group, and $-0.04 (0.12)$ for the paint-on gel group. The positive control group had significant greater improvement in b^* than both the dentifrice and paint-on gel groups ($p < 0.001$). The dual-phase dentifrice group had directional but not significantly different mean improvement relative the paint-on gel group. Results were similar with respect to L^* . All treatments were well tolerated over the 14-day treatment period. **Conclusion: In this meta-analysis of two randomized, positive-controlled clinical trials, a dual-phase dentifrice exhibited similar whitening efficacy relative to an 18% carbamide peroxide paint-on gel.**