

# Bleaching Sensitivity Reduction with a Nano-hydroxyapatite Paste

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**Objective:** Bleaching-related sensitivity is believed to be associated with microscopic enamel defects and sub-surface pores which allow peroxide to readily access the pulp. We investigated the ability of a paste containing nano-sized hydroxyapatite (nHAP) crystals [Renamel AfterBleach® (RAB); Sangi] to repair these defects and thus reduce tooth sensitivity.

**Methods:** A randomized double-blind clinical trial was conducted. 42 people were randomly assigned to use either a placebo which didn't contain the active ingredient, G-zeroHAP, or to the commercial product, G-RAB. Participants used 7% HP w/o desensitizer twice daily for 14 days. Applications were 30 minutes. RAB or zeroHAP was applied for 5 minutes following each application of bleach. There were six appointments. V1: screening; V2: impressions; V3: baseline evaluation; V4: week one bleaching; V5: week two bleaching; and V6: one week post bleaching. Starting one week prior to bleaching and ending one week after bleaching stopped, a daily log was used to record use of the bleach twice daily, presence/absence of sensitivity, and to rate sensitivity using a visual analog scale (VAS). **Results:** For G-zeroHAP vs.G-RAB respectively, the days of sensitivity at each period were: V3= 9 v7; V4= 50 v 20; V5= 26 v 16; V6= 16 v 14. As a group people in G-RAB experienced fewer days sensitivity (Chi Square; p = 0.001). VAS data were non-normal. The 25th scores were 0 for all groups and evaluations. For G-zeroHAP vs.G-RAB respectively, median (75th) scores were: V3= 0(0) v 0(0); V4= 2.1(7.3) v 0(1.2); V5= 0(.8) v 0(0); V6= 0(.1) v 0(0). Variance was high and statistical power was below accepted standards. The data did not support any reliable statistical conclusion.

**Conclusion:** Use of a paste containing nHAP following bleaching resulted in significantly fewer days of sensitivity. Study supported by Sangi Co., Ltd.; Tokyo; Japan.

Table: Percentage of Days w Sensitivity

Evaluation Number	Group	Days w Sensitivity	Days w/o Sensitivity
<i>Baseline</i>	A	9 (6%)	138 (94%)
<i>Week One Bleaching</i>	A	50 (34%)	97 (66%)
<i>Week Two Bleaching</i>	A	26 (19%)	114 (81%)
<i>One Week Post-bleaching</i>	A	16 (11%)	124 (89%)
<i>Baseline</i>	B	7 (5%)	140 (95%)
<i>Week One Bleaching</i>	B	20 (14%)	127 (86%)
<i>Week Two Bleaching</i>	B	16 (11%)	131 (89%)
<i>One Week Post-bleaching</i>	B	14 (10%)	133 (90%)

Observing the data it appeared that participants in Group A experienced more days of sensitivity during active bleaching than did those in Group B. As an additional observation a Chi Square Test of these data was conducted. There was a significant difference during the two groups for the active bleaching phase of the study. Participants in Group B experienced significantly fewer days of sensitivity than did those in Group A (Chi Square; p = 0.001).