Brushing with a Potassium Nitrate Dentifrice to Reduce Bleaching Sensitivity

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Abstract

- **Objective:** This research systematically evaluated the use of a clinically proven desensitizing dentifrice prior to a bleaching regimen in a randomized, multi-center, parallel group, open label clinical study following Good Clinical Practice guidelines.

- **Methodology:** Fourteen dental offices in West Palm Beach, Florida participated in the study during April/May 2004. Fourteen days prior to bleaching, impressions and oral soft tissue assessments were performed, and patients were randomized to either a KNO₃ plus fluoride dentifrice (Sensodyne® Fresh Mint), or a standard fluoride dentifrice (Crest® Regular), brushing 2x per day. On Day 14, patients returned to the dental office for their custom tray and the dispensation of a bleaching kit (Day White® Excel 3; 9.5% hydrogen peroxide and KNO₃). This was used daily according to the manufacturer’s instructions for 30 minutes, and normal oral hygiene continued to be performed using the assigned toothbrush and dentifrice, brushing 2x per day. At the end of each bleaching day, patients answered diary questions about the occurrence and intensity of sensitivity. At the conclusion of the 14-day bleaching period (Day 28), patients returned to their dental office for re-examination, returning all products and diaries. Within seven days of completing the study, patients answered a telephone patient satisfaction survey.

- **Results:** A total of 202 patients in fourteen (14) dental offices completed all aspects of the study and were used for the analysis. The professionally dispensed bleaching product provided an improvement of approximately 4.4 Vita shades, regardless of whether it was used with the KNO₃ plus fluoride dentifrice (Sensodyne®) or a standard fluoride dentifrice (Crest® Regular), brushing 2x per day. On Day 14, patients returned to the dental office for their custom tray and the dispensation of a bleaching kit (Day White® Excel 3; 9.5% hydrogen peroxide and KNO₃). This was used daily according to the manufacturer’s instructions for 30 minutes, and normal oral hygiene continued to be performed using the assigned toothbrush and dentifrice, brushing 2x per day. At the end of each bleaching day, patients answered diary questions about the occurrence and intensity of sensitivity. At the conclusion of the 14-day bleaching period (Day 28), patients returned to their dental office for re-examination, returning all products and diaries. Within seven days of completing the study, patients answered a telephone patient satisfaction survey.

- **Conclusion:** The use of the KNO₃ plus fluoride dentifrice (Sensodyne), two weeks prior to and throughout bleaching, may be a useful adjunct for the management of sensitivity caused by professionally dispensed bleaching products. With the bleaching-induced tooth sensitivity, those patients in the KNO₃ plus fluoride toothpaste group were significantly more satisfied with their whitening experience and willing to repeat the bleaching treatment.

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**Introduction**

The most common side effects associated with vital tooth bleaching, *i.e.*, using peroxide as the main bleaching agent and applied via a custom tray, were recently reviewed.¹ The conclusions were that some level of tooth sensitivity and gingival irritation were both likely to be found.

Research has found that bleaching agents readily penetrate tooth enamel and dentin into the pulp chamber of the tooth² and may cause sensitivity in the form of a reversible pulpitis.³ Tooth sensitivity can also be caused by mechanical pressure exerted by the bleaching tray. Other contributors to sensitivity include rigid tray materials, soft tissue contact, base vehicle composition and viscosity, flavoring agents, or patient habits. From the clinician’s standpoint, there are no hard and fast predictors for identifying who will experience sensitivity. It usually depends on inherent patient sensitivity, such as previous sensitivity determined from