COMMENTARY

ONE-YEAR CLINICAL EVALUATION OF THE EFFICACY OF A NEW DAYTIME AT-HOME BLEACHING TECHNIQUE

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This published article confirms the often-stated concept in tooth whitening that "Bleaching is dependent on time and concentration of the active agent on the tooth surface." The authors evaluated a 28% carbamide peroxide agent for 20 minutes once a day and a 10% carbamide peroxide agent with potassium nitrate and fluoride agent used overnight. The higher the concentration, the more rapidly tooth whitening occurs. Within 2 hours, carbamide peroxide degrades about 50%,¹ so the whitening potential of the agent is decreased but still considerable.

It would have helped the reader to have further information on the new daytime at-home bleaching technique. How saturated is the sponge that is placed in the tray against the teeth? How warm did the "patented heating element" register and what difference did it make in the temperature of the gel? The manuscript states that "the proprietary foam strip keeps the peroxide solution warm" but no information is given as to how this takes place. Since many researchers question the value of light activation, it would have been very beneficial to have had a control cell where the product was placed and no light used to determine what effect the "appropriate wavelength of visible light" had on the whitening process and on tissue sensitivity. Most of the manufacturers recommending light activation state that the soft tissue should be blocked out during the use of the light. Some readers may be concerned that no intermediate evaluation was completed.

The article states that "The average treatment time of each group was $4,340 \pm 235$ minutes in the Opalescence group, 200 minutes in Meta Tray group". The authors probably meant to state that the average treatment time for each person in the group, instead of the treatment time of each group. Another concern with the article is the statement that "... home bleaching systems with long-term bleaching procedures can penetrate deeper through the enamel in comparison with the other beaching systems." It is well accepted that peroxide penetrates to the pulp within 15 minutes regardless of the concentration.²

Another concern is the statement in the discussion section where the authors state that "the bleaching process induces enamel alterations ranging from minimal to pronounced depending on the concentration of the gel." Most studies in loss of microhardness and micromorphology have been conducted in vitro. When bleaching has been accomplished in vivo and teeth extracted to determine microhardness loss, none was found.³ When high concentrations of both carbamide and hydrogen peroxide bleaching agents have been used on teeth and impressions taken immediately after, no changes in micromorphology have been observed.⁴ Many of the studies cited where micromorphological changes were observed were the early studies where an acid rinse was use before bleaching. No manufacturer recommends an acid rinse before bleaching at the present time.

A study where a high concentration of hydrogen peroxide was compared with a daytime use of 10% carbamide peroxide has shown that approximately the same level of change occurred as reported in this study.⁵ It is therefore reasonable to expect the results found in this article; it just would have been better if more information were available to the researchers and the readership.

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