

In-office vital tooth bleaching--what do lights add?[Hein DK](#), [Ploeger BJ](#), [Hartup JK](#), [Wagstaff RS](#), [Palmer TM](#), [Hansen LD](#).

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Aqueous hydrogen peroxide (H₂O₂) has been used clinically at 30% to 35% levels to lighten teeth for many years, but the process has required multiple visits. Heat and light have been used empirically in attempts to catalyze H₂O₂ decomposition and speed tooth lightening. The contribution of bleaching lights (LumaArch, Optilux 500, and Zoom!) to act as catalysts for lightening teeth was studied in 83 pairs of contralateral anterior maxillary and mandibular teeth on 15 human subjects. Split-arch design using centrals, laterals, and canines on one side treated with bleach plus light, were compared with contralateral teeth using bleach alone. Three researchers trained in the use of the Vitapan 3D-Master Shade Guide took shades with independently agreement within 0.5 value-chroma sum 89% of the time throughout the study. Laboratory tests determined bleach gel chemistry, bleach light output, and effects on the bleaches of light alone and heat alone. Results showed that the three test lights did not lighten teeth more than their bleach gels alone. All teeth lightened to nearly the same degree (1.7 color increments), but LumaArch required 60% less time and Zoom! used 1/3 lower H₂O₂ concentration. Laboratory tests indicated that the proprietary chemicals mixed into each bleach gel just before use acted as catalysts and were probably responsible for more rapid lightening produced by LumaArch gel, and need for less H₂O₂ in Zoom! gel. Neither the heat produced by the accessory lights, nor the light output itself were responsible for catalytic activity with any of the three systems tested. Collectively, the data demonstrate positive effects from chemical catalysts added to bleaching gels. No output from any of the lights resulted in heat or light that catalyzed the gels.

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