

Evaluation of Photodynamic Therapy Using a Light-emitting Diode Lamp against *Enterococcus faecalis* in Extracted Human Teeth

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Abstract

Introduction: Photodynamic therapy (PDT) with high- power lasers as the light source has been proven to be effective in disinfecting root canals. The aim of this study was to evaluate the antimicrobial effect of PDT using toluidine blue O (TBO) and a low-energy light- emitting diode (LED) lamp after the conventional disinfection protocol of 6% NaOCl.

Methods: Single-rooted extracted teeth were cleaned, shaped, and sealed at the apex before incubation with *Enterococcus faecalis* for 2 weeks. Roots were randomly assigned to five experimental groups and three control groups. Dentin shavings were collected from the root canals of all groups with a #50/.06 rotary file, colony-forming units were determined, and the bacterial survival rate was calculated for each treatment.

Results: The bacterial survival rate of the NaOCl/TBO/light group (0.1%) was significantly lower ($P < .005$) than the NaOCl (0.66%) and TBO/light groups (2.9%).

Conclusions: PDT using TBO and a LED lamp has the potential to be used as an adjunctive antimicrobial procedure in conventional endodontic therapy. (J Endod 2011;37:856–859)

Key Words

Enterococcus faecalis, LED, NaOCl, photodynamic therapy, root canal

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