



Blagovesta Yaneva

Bactericidal effects of using a fiber-less Er:YAG laser system for treatment of moderate chronic periodontitis: Preliminary results

Blagovesta Yaneva, DMD¹/Elena Firkova, DMD, PhD²/Emilia Karaslavova, MD, PhD³/Georgios E. Romanos, DDS, PhD, Prof Dr Med Dent⁴

Objective: The purpose of this study was to evaluate the bactericidal effectiveness of using a fiber-less Er:YAG laser in the first stage of therapy for moderate chronic periodontitis and to compare it with conventional treatment. **Materials and Method:** Two quadrants from 20 patients with moderate chronic periodontitis were treated with Gracey curettes (control), and the contralateral two quadrants in each patient were treated using an Er:YAG laser with total power of 1.5W (test). Subgingival plaque samples from the four deepest pockets in each quadrant were taken immediately before and 1 month after treatment, and the presence of nine marker bacteria were studied using real-time polymerase chain reaction technology. **Results:** A significant reduction of total pathogens and bac-

teria from the red complex was observed 1 month after treatment with both procedures. The results were more significant for the test group ($P = .003$) than for the control group ($P = .005$). Qualitative analysis of sites that had a therapeutically significant number and proportion of marker bacteria also showed significant reduction after treatment. **Conclusion:** The results of the present study suggest that the Er:YAG laser possesses comparable with conventional treatment bactericidal effectiveness against periodontal pathogens in vivo in the initial treatment of moderate chronic periodontitis. More evaluations should be performed to prove these results for a long-term successful clinical outcome. (*Quintessence Int* 201#;##:1-9; doi: ##.###/j.qi.a#####)

Key words: antibacterial, curette, Er:YAG laser, periodontal disease

Chronic periodontitis is one of the most common oral diseases. It is widely accepted that its initiation and progression depends on the presence of marker bac-

teria¹ that have been defined and divided into specific groups, according to their pathogenic potential.² The major goal of periodontal treatment is therefore to eliminate the bacterial biofilm.³

Nonsurgical periodontal treatment, ie scaling and root planing (SRP), eliminates dental plaque, calculus, and bacterial debris from the root surface.⁴ A variety of hand and power-driven instruments are used for this purpose, but they have some limitations, such as difficult access to furcation areas and concavities, as well as some disadvantages: they are time-consuming and require significant operator effort.^{5,6}

¹ PhD Student, Department of Periodontology and Oral Diseases, Faculty of Dental Medicine, Medical University-Plovdiv, Bulgaria.

² Associate Professor, Department of Periodontology and Oral Diseases, Faculty of Dental Medicine, Medical University-Plovdiv, Bulgaria.

³ Assistant Professor, Faculty of Biology, Plovdiv University "Paisii Hilendarski", Bulgaria.

⁴ Professor and Associate Dean for Clinical Affairs, School of Dental Medicine, Stony Brook University, Department of Dental Medicine, New York, USA.

Correspondence: Dr Georgios E. Romanos, Stony Brook University, School of Dental Medicine, Department of Dental Medicine, 184C Sullivan Hall, Stony Brook, NY 11794-8705, USA. Email: georgios.romanos@stonybrook.edu

Reference:

Yaneva B, Firkova E, Karaslavova E, Romanos GE. Bactericidal effects of using a fiber-less Er:YAG laser system for treatment of moderate chronic periodontitis: preliminary results. *Quintessence Int.* 2014 Jun;45(6):489-97. doi: 10.3290/j.qi.a31803. PMID: 24701614.