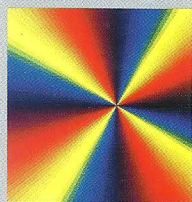


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## SPECIAL ISSUE

Abstracts of the  
10th Meeting of ISLD &  
15th Annual Congress of DGL  
Berlin, May 18–20, 2006

## SONDERAUSGABE

Abstracts der  
10. Tagung der ISLD & des  
15. Jahreskongresses der DGL  
Berlin, 18.–20. Mai 2006

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## Photosensitization of *Actinobacillus Actinomycetemcomitans* with Malachite Green and Methylene Blue: Microbiological Analysis

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**Purpose:** *Actinobacillus actinomycetemcomitans* is one of the most important bacteria in the periodontal disease. The aim of this study was to investigate the efficiency of two well-known photosensitizers and low-power red laser under different doses on the reduction of *A. actinomycetemcomitans* in vitro. **Material and Methods:** Suspensions of *A. actinomycetemcomitans* were distributed in eight groups: (A) control group; (B) laser alone (5 min); (C) malachite green (MG) alone (0.01% m/v); (D) methylene blue (MB) alone (0.01% m/v); (E) MG + laser (3 min); (F) MG + laser (5 min), (G) MB + laser (3 min), (H) MB + laser (5 min). It was used a low-power red laser emitting wavelength of 660 nm and 30 mW of output power, corresponding to a dose of 9 J/cm<sup>2</sup> for 5 min and 5.4 J/cm<sup>2</sup> for 3 min. Survivors were enumerated by viable counting. **Results:** Neither irradiation of the organisms in the absence of MG and MB (group B) nor incubation with MG or MB in the dark (groups C and D) had a significant effect on the viability of *A. actinomycetemcomitans*. Exposure to the 30 mW laser light eliminated up 99.9% of bacteria. The specie was susceptible to lethal photosensitization under all of the conditions tested (groups E, F, G, and H). In particular, the most effective killing was achieved in the group F. **Conclusion:** These results suggest the efficiency of MG- and MB-mediated lethal photosensitization of *A. actinomycetemcomitans* under different doses.

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## Temperature Rise of Dental Pulp During Photo-Activated Disinfection (PAD of Periodontal Pockets): An In Vitro Study

El Yazami H, Bogaerts I, Dickers B, Tran P, Lamard L, Peremans A, Heyselaer D, Tielemans M, Rompen E, Rocca JP, Nammour S

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The capacity of photosensitizers, used in combination with laser light, to kill micro-organisms has been demonstrated in different studies. Photo Activated Disinfection (PAD) has been introduced in periodontology as an aid for disinfection of periodontal pockets. The aim of this study is to verify the harmless for dental vitality of the use of Photo Activated Disinfection (PAD) in periodontal bone pockets. Root canals of 24 freshly extracted teeth were prepared using profile up to size ISO 40 and filled with Thermoconductor paste. A silicon false gum was made, in which a bone periodontal pocket was generated and filled with photo sensitizer (tolonium blue: 1.2 mg/l). External root surface was irradiated during 150 sec with a 635 nm diode laser, (output power: 100mW, effective energy density: 62.5 J/cm<sup>2</sup>) using a periodontal tip which has a diameter of 400 µm and 9 mm of length (Denfotex technologies Ltd). Temperatures were recorded at 8 mm from working length inside the root canal using a thermocouple. The measurements were recorded every second, started 10 sec. before laser, during the irradiation and were continued 150 seconds after the end of irradiation. 5 records were done per tooth. Results: The average of temperature rise of 0.56°C was recorded. The results demonstrated that the pulp temperature rise was lower than 3 °C that is considered as harmless for pulp injury. We can conclude that regarding the pulp temperature increase, the use of PAD for disinfection of periodontal pockets can be considered as safe procedure for dental vitality.

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## Sem Evaluation of Class II Cavities Prepared and Etched With Er,Cr: YSGG Laser

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**Objective:** The use of alternative technologies in dentistry such as laser irradiation has been increasingly widespread for the treatment of enamel and dentin, in an attempt to optimize acid conditioning, seeking the achievement of a micro retentive structure that is advantageous for bonding procedures. The purpose of this invitro study was to evaluate the effect of Er, Cr: YSGG laser (Biolase/Waterlase) on Class II cavities with combination of preparation and etching procedures. **Method:** Fresh extracted, sound human third molar teeth were used for this study. Class II cavities were prepared on mesial surfaces of teeth located at 1 mm below the cemento-enamel junction as follows: (1) With a high - speed hand piece, (2) With Er,Cr: YSGG laser at 6 W; (3) With a high-speed hand piece and etched with Er, Cr: YSGG laser at 1 W, (4) With Er, Cr: YSGG laser at 6 W and etched at 1 W, (5) With Er,Cr: YSGG laser at 6 W and etched with 37 % ortho phosphoric acid for 15 seconds, (6) With high-speed hand piece and etched with 37% ortho phosphoric acid. The specimens were observed under scanning electron microscopy. **Results:** Cavities prepared with high speed hand piece revealed a smooth surface with tubuli orifices devoid of smear plugs and crackings. Cavities prepared with high