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## Comparative Study of the Intracanal Microbial Reduction of Both a Low-Power Laser Combined with a Photosensitizer and a High-Power Laser

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In endodontic treatment of non-vital teeth with necrotic pulps and periapical lesion, as well as in teeth requiring re-treatment, the success rate according to Sundqvist (1998) is less than 74%. This unfavorable situation is directly related to the difficulty of controlling and eliminating intracanal infection. The microbiota found in these cases is increasingly more resistant to irrigating substances, as well as to systemic and intracanal medication. One of the bacterial species found in refractory infections is *Enterococcus faecalis*, which is capable of invading the tubular dentin and re-colonizing the canal system, even after adequate chemical-surgical preparation. Gutknecht (2000), using laser technology, obtained a 99% reduction in intracanal bacteria. The present study comparatively analyzed the intracanal microbial reduction produced both by a low-power laser combined with a photosensitizer and a high-power laser. Twenty-eight crownless, single-rooted human teeth, prepared with rotary instrumentation, were used. After sterilization, the teeth were divided into two groups and inoculated with 10 µL of an *Enterococcus faecalis* suspension (ATCC 29212). After 7 days, 8 samples were immediately prepared for colony forming unit counting (control group – CG); 10 samples (Group I – GI) received a 0.01% methylene blue dye solution inside the canals and were radiated with a low-power laser (P = 37,7 mW, continuous mode); 10 samples (Group II – GII) were radiated with a high-power laser (P = 2.27 W, interrupted mode); **Results:** GI presented a 91.9% microbial reduction; GII, a 91.6% microbial reduction. Conclusion: both procedures produced intracanal microbial reduction.

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## Evaluation of the Effects of Pulsed Nd:YAG Laser on RAU

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**Background:** Comparison of therapeutic outcome of two different methods of laser therapy in patients with aphtous ulcers and in control subjects. **Method and Material:** This study was performed as a clinical trial performed on 138 patients with oral aphtous ulcers who were randomly assigned into three groups, as follows: Group 1 or Y: Whose ulcers were treated with focal laser beam. Group 2 or X: whose ulcers were treated with nonfocal laser beam; and group 3 or Z who received placebo treatment. The specifications of the laser beam were as follows: Nd:YAG laser: P = 3 w, E = 100 mJ, F = 30 Hz, T = 60 Sec, fiber optic = 300. He-Ne laser was used for marking the beam of Nd:YAG (P = 5 mW). In group Y the laser beam was administered from a distance of 6 mm on the ulcer's center and up to 1 mm of its outer border without using a clear and defined point of radiation. In group X, a well defined point beam of Laser was radiated from a distance of 2 mm from the ulcer's center in a helical fashion and covering up to 1 mm of the ulcer's outer border. In group Z, He-Ne laser was used as placebo while Nd:YAG laser beam was off. **Results:** In group X and Y, a significant reduction in pain was observed compared to group Z (P < 0.00001). Pain relapse after the first day was lowest in group Y and highest in group Z (P < 0.00001). The duration of pain was lowest in group Z (p < 0.00001). The duration of recovery period was lowest in group X and highest in group Z (p < 0.00009) **Discussion:** The results of this study reveal the usefulness of Nd:YAG laser therapy in pain relief and rapid recovery in patients with oral aphtous ulcers. In addition, no placebo effect was observed for laser and no side effect were detected.

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## Comparison Effect of the Laser Bleaching & Power Bleaching on Alteration of the Human Tooth Color: In Vitro Study

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**Background:** Bleaching of the teeth by "in-office" bleaching techniques are popular methods of whitening teeth. The purpose of this study was to evaluate and compare the alteration of tooth color after 2 in-office bleaching techniques (power bleaching & laser bleaching). **Materials and Methods:** 20 freshly extracted human Incisor were selected, embedded in Rose wax and polished with pamis powder, then randomly divided into 2 groups of 10 each (n = 10); Power bleaching group (P.B) and Laser bleaching group (L. B). color of all specimens were evaluated by 3 methods: 1) by Spectrophotometer 7000A (McBeth-USA) 2) with photography by SONY digital camera and evaluated by Photoshop computer program (v.8) 3) EasyShade-3D (3D-Vita C.O). All of specimens were stored in normal saline before & after treatment. They were tested & evaluated for color with all 3 methods, before treatment as a control group. The treatment protocols which was followed, for each group was: The P.B. were bleached with Opalescence Xtra Boost (38% H<sub>2</sub>O<sub>2</sub>) (Utradent Co. U.S.A) which was activated by chemical activator; At first for 15 minutes, and was washed & immediately retreated again for 20 minutes again, then stored in normal saline. The L.B were bleached with