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**BACTERICIDAL EFFICACY OF DIODE LASER IRRADIATION IN ENDODONTIC TREATMENT: AN  
IN VIVO STUDY**

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The antimicrobial effects of endodontic therapy associated with diode laser irradiation were investigated using culture and polymerase chain reaction (PCR). Single rooted teeth (N=18) with primary infection were included in this study and divided into two groups. The antimicrobial activity at control group was characterized by the use of 0.5 % NaOCl solution and calcium hydroxide, whereas at laser group the action of these substances was associated with diode laser irradiation (CW; P = 2,5 W;  $\emptyset$  = 400  $\mu$ m; I = 1.989 W/cm<sup>2</sup>). Samples were collected from the root canal at different moments of the treatment: upon access (S1), after instrumentation and laser (S2), and after 7 (S3) and 14 days (S4). Microbiological analysis consisted of total anaerobic and enterococci viable counts and detection of *E. faecalis* by PCR. Anaerobic bacteria were detected in all samples at S1 and decreased to 22% (C) and 33% (L) at S4. Therapy resulted in log reductions in CFU anaerobic bacteria/sample of 3.5 $\pm$ 1.8 (C) and 4.2 $\pm$ 1.5 (L) at S2, but they did not differ between groups. *Enterococcus/E. faecalis* were detected in 33% (C) and 22% (L) samples at S1, whereas 11% remained infected at S4 (C) against no detection in L. In conclusion, both treatments demonstrated bactericidal effect on infected root canals.