

Antibacterial activity of Sodium Hypochlorite and 980 nm Diode Laser against Enterococcus Faecalis biofilms in infected root canals

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ABSTRACT

Objective: To assess the antibacterial efficacy of sodium hypochlorite (NaOCl) and 980 nm diode laser on infected root canals with Enterococcus "E" Faecalis biofilms.

Material and Methods: Sixty-five upper anterior incisors human teeth with single root and root canal were instrumented by protaper system up to F3. Biofilms of E. faecalis were generated based on a previously established protocol. Five teeth were used to check the biofilm formation, then the remaining teeth were randomly divided into three equal experimental groups according to disinfection techniques used: group 1 , the teeth irrigated by 3 ml of 2.5% NaOCl , group 2 , the teeth were irradiated with 980 nm diode laser with 2 watt for 15 second repeated for three times with 15 sec intervals , group 3, the teeth irritated by 980 nm diode laser with 2 watt for 15 second then irrigated by 1 ml of 2.5% NaOCl and then repeated three times . The antibacterial efficacy was evaluated by colony forming units, and relative intensity of live/dead bacteria, using Confocal Laser Scanning Microscopy. Data were analysed by proper statistical analysis with P= 0.05.

Results: Regarding the disinfection method, all groups had a significantly high percentage of bacteria reduction ($P \leq 0.001$).

Conclusion: Under the condition of the present study, results reinforced that 980 nm diode laser irradiation is a useful adjunct in disinfection of infected root canals with E. Faecalis biofilms.

Keywords: sodium hypochlorite (NaOCl) , 980nm diode laser , infected root canals , Enterococcus "E" Faecalis , Confocal laser scanning microscopy (CLSM).