ABSTRACT

Background : The goal of endodontic treatment is to eliminate pathogenic bacteria of infected root canals. The most frequent bacteria can cause infected root canals is *Enterococcus faecalis* which is resistant to some medicaments and root canal irrigation. Photodynamic therapy (PDT) is a new antimicrobial method that involves the use of a photosensitizer and a light source for root canal disinfection. Irradiation time of PDT can affect produce of singlet oxygen and ROS to destruct bacteria **Purpose :** To analyze difference irradiation time of photodynamic therapy against the number of *Enterococcus faecalis* bacteria **Method :** This study used a culture of *Enterococcus faecalis* bacteria which was divided into 7 groups in eppendorf tubes. Group I as the control group, group II, III, IV, V and VI was given photosensitizer Toluidine Blue O (TBO) and photoactivated with irradiation time for 10, 20, 30, 40, 50 and 60 seconds. After incubation the number of bacteria was calculated. **Result :** There was significance difference ($p < 0,05$) among the various groups. Irradiation time of PDT for a longer time (Group VI and VII) showed the significantly higher antibacterial effects of *Enterococcus faecalis* bacteria. **Conclusion :** The more irradiation time of PDT results the less number of *Enterococcus faecalis* bacteria. A 50-second irradiation time is the most effective time to against the entire number of this bacteria.

Keyword : photodynamic therapy, *Enterococcus faecalis*, irradiation time