Abstract

This study aimed to compare the antimicrobial efficacy of low-temperature atmospheric pressure plasma (LTAPP) design and gaseous ozone delivery system with 2.5% NaOCl on Enterococcus faecalis in root canal walls and dentine tubules. The samples were divided into LTAPP (n = 12), ozone (n = 12), NaOCl (positive control, n = 12) and saline (negative control, n = 6) groups. Microbial samples were collected using paper points and dentin chips from root canals. Antimicrobial efficacy was assessed by counting the colony-forming units of Ent. faecalis before and after each irrigation protocol. Data were analysed using Kruskal Wallis, Wilcoxon signed-rank, Friedman and Bonferroni t (Dunn’s test)-tests (P = 0.05). The microbial sampling with paper points showed antibacterial efficacy of NaOCl, LTAPP, ozone and saline in descending order, respectively (P < 0.05). The microbial sampling with dentin chips demonstrated a superior efficacy of LTAPP compared with NaOCl in the middle third (P < 0.05), while both had similar effects in coronal and apical thirds (P > 0.05). NaOCl and LTAPP were better than ozone at the coronal and middle parts of the root canals (P < 0.05). These findings led us to suggest that LTAPP, which has no thermal and chemical effects, may be of great aid in endodontic treatment.

Keywords

**Author Keywords:** disinfection; Enterococcus faecalis; Low-temperature atmospheric pressure plasma; NaOCl; ozone

**KeyWords Plus:** IN-VITRO EVALUATION; DENTINAL TUBULES; OZONATED WATER; GASEOUS OZONE; ANTIMICROBIAL EFFICACY; APICAL PERIODONTITIS; SODIUM-HYPOCHLORITE; EX-VIVO; STERILIZATION; BIOFILMS

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