ABSTRACT

AIM:
To analyse the effect of benzalkonium chloride surfactant-sodium hypochlorite combination in the elimination of E. faecalis from the root canal during retreatment.

OBJECTIVES:

The objectives of this in vitro study were as follows:

1. To assess the effect of sodium hypochlorite at a higher concentration (6%) in removing bacteria E. faecalis from the root canal during retreatment procedure, by evaluating the reduction in the number of colonies present (CFU/mL) using the paper sampling method and colony counter.

2. To assess the efficacy of sodium hypochlorite (6%) when used with a surface active agent benzalkonium chloride (0.008%) in eliminating the bacteria E. faecalis completely from the root canal during retreatment procedure, by evaluating the number of colonies present (CFU/mL) using the colony counter with paper sampling method.

METHODOLOGY:

Sixty four extracted human lower first premolars with single canal were prepared with rotary instrumentation and obturated. Teeth were divided into 4 groups. Three experimental groups are inoculated with E. faecalis and cultured for 21 days: Positive Control group, No irrigation; NaOCl group; irrigated with 5ml 6% NaOCl; NaOCl/BAK, irrigated with 5ml
0.008% BAK/6% NaOCl. Negative Control group received medium only and no inoculate. Paper point sampling of the canals were obtained before irrigation for all 4 groups (A,B,C1,D1) and for 2 groups after irrigation (C2, D2) to determine the remaining colony forming units.

**RESULTS:**

Result of this present study showed that the use of 6% NaOCl showed reduction in the number of CFU/mL from $3.27 \times 10^4$ to $0.89 \times 10^2$ ($P=.000$). The use of surfactant 0.008% BAK added to the irrigant 6% NaOCl reduced the colony count from $3.33 \times 10^4$ CFU/mL to $0.5 \times 10^3$ CFU/mL ($P=0.001$) during retreatment procedure.

**CONCLUSION:**

1. NaOCl (6%) does not eliminate the bacteria E. faecalis completely from the dentinal walls of the root canal during retreatment.

2. Irrigation of the root canal with 0.008% BAK followed by 6% NaOCl was effective in completely removing all the bacteria (E. faecalis) from the root canal walls during retreatment.

**Keyword:** Enterococcus Faecalis, Sodium hypochlorite, Benzalkonium chloride, Paper point samples.