Development of Antimicrobial Peptides with Potential for Endodontic Therapies

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INTRODUCTION. In dentistry, endodontic therapy failure is usually related to microorganisms resistance to mechanical and chemical root canal disinfection being *Enterococcus faecalis* and *Candida albicans* involved in multiple cases. This study aimed to evaluate the *in vitro* antimicrobial peptides potential against *E. faecalis* and *C. albicans* in comparison to traditional intracanal medications. MATERIAL AND METHODS: *E. faecalis* (ATCC 29212) and *C. albicans* (ATCC 10231) were growth until 1x10⁶ and 2.5x10³ CFU.mL⁻¹ and the minimum inhibitory concentration (MIC) of two clavanins (A and MO) and LL-37 were compared to intracanal medications. The traditional intracanal medications used were selenium mineral trioxide aggregate (MTAsn) and calcium hydroxide (Ca(OH)₂). Positive controls were ampicillin (for bacterial assay) and amphotericin B (for yeast assay). Results were analyzed by ANOVA and Dunnet’s posttest (p<0.001). RESULTS AND DISCUSSION: *E. faecalis* assay revealed that the highest MIC was observed in Ca(OH)₂ group (7558.07 µM, p<0.001) and lowest MICs were observed in ampicillin (control) (21.47 µM, p<0.001) and LL-37 groups (16.69 µM, p<0.001). *C. albicans* assay revealed that the lowest MIC was observed in amphotericin B group (control) (0.34 µM, p<0.001) and the highest MIC was observed in MTAsn (40476.47 µM, p<0.001). Indeed, LL-37 presented the lowest MIC in bacterial assay (16.69 µM, p<0.001), while LL-37 and clavanin MO presented lower MICs (155.79 and 153.86 µM, respectively) in yeast assay in comparison to traditional intracanal medication. The wide discussion reporting bacterial resistance to antibiotic and intracanal medication and the common yeast presence in refractory lesions in association with bacteria, corroborates for further studies of newly and efficient intracanal medications development. CONCLUSION: Antimicrobial peptides here studied presented a biotechnological potential as intracanal medication. Still, further studies are needed to analyze immunological and histological parameters.

Keywords: Antimicrobial peptides, *Enterococcus faecalis, Candida albicans*

Supported by: PIBIC/CNPq, UCB, CNPq, CAPES