ABSTRACT

IMMUNOPATHOBIOLOGY MECHANISM OF PERIAPICAL TEETH BONE RESORPTION IN CHRONIC APICAL PERIODONTITIS CAUSED BY *ENTEROCOCCUS FAECALIS* BACTERIA INFECTIONS (Experimental Laboratory Study in Wistar rats)

Background : Periapical lesions as an indicator of root canal treatment failure often occurs without clinical symptoms or known as Chronic Apical Periodontitis. Bacteria *E faecalis* is the most species (89.6%) were found in root canal treatment failure. Inflammatory bone resorption is a complex process that involves the regulation of inflammatory mediators to stimulate osteoclast formation (osteoclastogenesis) causes periapical bone resorption.

Purpose:This study was to find the Immunopathobilogy mechanism of teeth bone resorption in Chronic Apical Periodontitis caused by *E faecalis* bacterial infections.

Methods : This study is an experimental laboratory research with a completely randomized design post only control group to determine the effect of *E faecalis* bacteria. The study used 24 Wistar rats were divided into three groups (each group consisted of 8 rats). Negative control group was healthy teeth, in the solvent control group made by drilling the upper right first molar teeth to penetrate the dental pulp was induced with 10µl BHI-b then filled with Glass Ionomer Cement (GIC). In the treatment group, after drilling and then inoculated with *E faecalis* ATCC29212 10^6 CFU into 10 µL BHI-b then filled with GIC to prevent contamination. It takes 21 days to get periapical lesions after pulp infection. Rats were sacrificed and then immunohistochemical examination was made to measured the expressions of TLR-2, NF-κB, IL-12, IFN-γ, iNOS, TNF-α, RANKL, OPG, NFATc1 and histologically to count the number of osteoclasts**.**

Result : Statistical analysis found significant differences between the controls and treatment groups ($p < 0.05$). It is evident that *E faecalis* bacteria can increased the expressions of TLR-2, NF-κB, IL-12, IFN-γ, iNOS, TNF-α, RANKL, NFATc1, osteoclast numbers and decreased of OPG.

Conclusion of this research was*, E faecalis* bacteria showed to increase the number of osteoclasts causing bone resorption in Immunopathobiology Mechanism of Periapical teeth Bone Resorption in Chronic Apical Periodontitis.

The new finding in this study is : Immunopathobiology mechanism of periapical teeth bone resorption in Chronic Apical Periodontitis caused by *E faecalis* bacterial infections through a parameter study TLR-2, NF-κB, IL-12, IFN-γ, iNOS, TNF -α, RANKL, OPG, NFATc1 and osteoclast numbers.

Keywords: *Enterococcus faecalis*, periapical teeth bone resorption, Chronic Apical Periodontitis