

## Effectiveness of *Garcinia Mangostana* Extract in Reducing Lipoteichoic Acid (LTA) of *Enterococcus faecalis* in Human Periodontal Ligament Fibroblasts (HPDLFs)

### ABSTRACT

**Background :** *Enterococcus faecalis* is a microorganism commonly detected in persistent endodontic infections. Its prevalence in such infections ranges from 24% to 77%. Lipoteichoic acid (LTA) is a major virulence factor of *Enterococcus faecalis* acts as an adhesion molecule binds to host cells via its lipid moiety and promote bacterial colonization and invasion. LTA recognized by TLR2 and TLR4 that are expressed on periodontal ligament cells. Binding of TLR and LTA leads to recruitment of inflammatory cells and also cytokines and subsequent osteoclast activation which leads to destruction of periodontal and periapical lesions. Root canal irrigation materials that are widely used nowadays is NaOCl, but this material has many shortcomings. The pericarp of *Garcinia Mangostana* that can be an alternative material which could inhibit and bactericidal function to *Enterococcus faecalis*. This experimental research was done using human periodontal ligament fibroblasts (HPDLFs) to examine if *Garcinia Mangostana* extract can reduce the amount of LTA by the expression of TLR-2 and TLR-4

**Purpose :** The aim of this study was to know the effectiveness of *Garcinia Mangostana* extract to LTA by the expression of TLR-2 and TLR-4 in human periodontal ligament fibroblasts.

**Method :** This research was a laboratory experimental. Two groups of HPDLFs culture were induced with *Garcinia Mangostana* extract within concentration 5 µg/ml, 6 µg/ml, 7 µg/ml, 8 µg/ml, 9 µg/ml, 10 µg/ml. And each group then induced with LTA 15 µg and 30 µg. The number of sample of each group is 3 (n=3). After that, observed the result of the amount of TLR-2 and TLR-4 by using immunocytochemistry.

**Results :** There were significant differences between each group (p<0,05).

**Conclusion :** *Garcinia Mangostana* extract lower the LTA by the expression of TLR-2 and TLR-4 in human periodontal ligament and the most effective concentration is 10 µg/ml.

**Keywords :** Root canal treatment failure, *Enterococcus faecalis*, Lipoteichoic acid, *Garcinia Mangostana*, human periodontal ligament fibroblasts (HPDLFs).