ABSTRACT

ROLE OF PAPAYA SEED ETHANOL EXTRACT (CARICA PAPAYA LINN) ON IL-1β EXPRESSION, OSTEOCLAST AND OSTEOBLAST PERIODONTITIS RAT

Background. Periodontitis produces an inflammatory response mediated by macrophages producing cytokines which are a normal response, but chronic inflammation with excessive cytokine production results in periodontal tissue damage. IL-1β, osteoblasts and osteoclasts which are responsible in progression of periodontitis can inhibit by papaya seed ethanol extract, presumably by its bioactive polyphenols (flavonoids and phenolic acids) through inhibiting IκB phosphorylation, HAT activity, and activating HDAC, resulting in inhibition of IL-1β expression, also inhibit transcriptional activity and nuclear translocation of NF-κB nuclei resulting in increase of osteoblastogenesis and suppresses osteoclasts. Purpose. This study aims to prove the role of papaya seed ethanol extract in decreasing IL-1β expression, decrease osteoclast number, increase osteoblast number and prove the difference between dose of papaya seed extract in rat periodontitis. Method. The research design is in vivo experimental study. 35 male wistar rats were divided into 5 groups randomly (each group n=7). One of the groups did not induce and given normal diet (control). The first group of Periodontitis (P1) induced by LPS P. gingivalis + ligature, given normal diet. The remaining three groups (P2, P3, P4) induced by LPS P. gingivalis + ligature were then given 200 mg / kgBW, 300mg / kgBW and 400mg / kgBW ethanol extract of papaya seeds respectively. A transversal cutting of the alveolar bone is performed around the mandibular incisors, then processed in a laboratory for histopathology and immunohistochemistry analysis. Result. Statistical analysis with One Way Anova test showed that papaya seed ethanol extract decreased expression of IL-1β number, osteoclast number and increased osteoblast number (p <0.05). Conclusion. This experimental study proves that papaya seed ethanol extract plays a role in inflammatory mediator in animal model periodontitis.

Keyword. Papaya seed ethanol extract, periodontitis, IL-1β, osteoblast, osteoclast.