INTERLEUKIN-6 EXPRESSION ON INFLAMMED RAT DENTAL PULP TISSUE 
AFTER CAPPED WITH Trigona sp PROPOLIS FROM SOUTH SULAWESI, 
INDONESIA

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Background: Propolis is a natural product of plant resins collected by honeybees from various plant sources. It is used as a remedy in folk medicine since ancient times because of its several biological and pharmacological properties. Recently, propolis has been used by dentist to treat various oral diseases. It was always mentioned as an anti-inflammatory agent. Cytokines are proteins that provide communication between cells and play a critical role in a wide variety of processes. It’s released from cells in an inflammatory process that active, mediate or potentiate actions of other cells or tissues. When dental pulp has inflammation, several pro-inflammatory cytokines including Interleukin-6 (IL-6) was released by innate immune cells. Objective: To analyse the expression of IL-6 on inflamed rat dental pulp tissue following application of propolis. Materials and methods: Trigona sp propolis was obtained from Luwu Regency, South Sulawesi Province, Indonesia. Flavonoid and non-flavonoid extracts were purified from propolis using thin layer chromatography. The study was applied on 80 male Sprague Dawley rats, 10-12 weeks of age, divided randomly and equally into 5 groups. Group I, as negative control group was not conducted any treatment. At group II, III, IV and V. A Class I cavity (Black Classification) were made on the occlusal surface of right maxillary first molar. The dental pulp was perforated using dental explorer and allowed in the oral environment for 1 hour, after that, Ethanolic Extract Propolis (EEP) (Group II), Extract Flavonoid-Propolis (EFP) (Group III), Extract Non-Flavonoid Propolis (ENFP) (Group IV), or Calcium Hydroxide (Ca(OH)2) (Group V) were applied on dental pulp. All cavities were then filled with Glass Ionomer Cement as permanent filling. The rats being sacrificed in 6 hours, 2 days, 4 days and 7 days. Sample biopsy were obtained, IL-6 expression was detected by using immunohistochemistry method. Data was analyzed statistically using Freidman and Kruskal Wallis tests with significance level of p<0.05.
Results: All agent showed IL-6 expression in inflamed rat dental pulp tissue, and this expression was decreased with the longer of observation time periods. EEP more stronger to decreased IL-6 expression on inflamed rat dental pulp tissue than other agent. There is significant difference (p<0.05) of IL-6 expression between group I and other groups in 6 hours and 2 days but not in 4 and 7 days time periods. Conclusion: Trigona sp propolis from South Sulawesi, Indonesia could supressed the expression of IL-6 on inflammed rat dental pulp tissue.

Keywords: Interleukin-6, Propolis, Flavonoid, Non-flavonoid, Calcium Hydroxide, Dental Pulp, Inflammation, Rat.

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