

Malondialdehyde And Superoxide Dismutase Expression in Dental Pulp Following Direct Pulp Capping With Combination of Calcium Hydroxide and Propolis Extract

ABSTRACT

Background : One of the disadvantage of calcium hydroxide ($\text{Ca}(\text{OH})_2$) as pulp capping material is it can induce pulp inflammation which last up to 3 months. One of mediator identified during the inflammatory process is free radicals. An increase in oxygen free radicals in the pulp disturbs the defensive function of the pulp like its ability to form reparative dentine. The most predicative markers that often used for oxidative stress are malonaldehyde (MDA) and superoxide dismutase (SOD). Propolis has antioxidant activity that can reduce free radicals. **Objective :** To determine and compare the expression of MDA and SOD in rat's dental pulp after capped by $\text{Ca}(\text{OH})_2$ and combination of $\text{Ca}(\text{OH})_2$ – propolis extract. **Method :** Thirty Wistar rats were divided randomly into three groups of ten rats each. Group I : control, Group II : $\text{Ca}(\text{OH})_2$, Group III : combination of $\text{Ca}(\text{OH})_2$ – propolis extract. The rat's teeth were prepared using low speed round bur until perforated then the capping agent was applied. After 3 and 7 days the rats were sacrificed and processed for histological analysis. **Result :** There were significant differences of MDA and SOD expression in day 3 and day 7 between $\text{Ca}(\text{OH})_2$ – propolis group and $\text{Ca}(\text{OH})_2$, and between $\text{Ca}(\text{OH})_2$ – propolis group and control group. **Conclusion :** MDA expression after application of combination $\text{Ca}(\text{OH})_2$ – propolis extract was smaller and SOD expression after application of combination $\text{Ca}(\text{OH})_2$ – propolis extract was higher after 3 and 7 days than application of $\text{Ca}(\text{OH})_2$.

Keywords : calcium hydroxide, propolis extract, MDA, SOD, direct pulp capping