

## **Efficacy of photobiomodulation when used with calcium hydroxide for pulp capping of dogs' teeth**

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### **Abstract**

**Objective:** The current study assessed the effect of calcium hydroxide [Ca (OH)<sub>2</sub>] and Photobiomodulation [PBM] on pulp capping when [Ca (OH)<sub>2</sub>] is used as a dental pulp capping material on dental pulp exposures of dogs' teeth.

**Methods:** 48 teeth in 3 mongrel dogs were divided in random into two major study groups; group I where Ca (OH)<sub>2</sub> was used as a pulp capping agent and group II in which both Ca (OH)<sub>2</sub>+PBM were used. The groups were equally divided according to the observation period following completion of pulp capping into Subgroup (A) 1week, Subgroup (B) 2 and subgroup (C)16weeks. The teeth were examined for histological inflammatory response as well as dentine bridge formation.

**Results:** With regards to inflammatory response at 1 week significantly less intense inflammation was observed in Ca (OH)<sub>2</sub>+PBM (group II) compared to the Ca (OH)<sub>2</sub> (group I) for the same time period with no significant difference for between group I and group II for other time intervals. As for dentin bridge formation PBM+Ca(OH)<sub>2</sub> groups showed statistically significant thicker dentine bridge formation at 16 weeks than Ca(OH)<sub>2</sub> alone group for the same time period with no significant difference for between group I and group II for other time intervals.

**Conclusions:** Under the conditions of this study, laser irradiation appeared to be a beneficial adjunct in dental pulp capping procedures in which Ca (OH)<sub>2</sub> was the pulp capping material.

**Keywords:** diode laser, dentinal bridge, direct pulp capping, Ca(OH)<sub>2</sub>.