

**EFFECT OF PROPYLENE GLYCOL ADDITION IN THE COMBINATION  
OF CALCIUM HYDROXIDE AND PROPOLIS ON THE COMPRESSIVE  
AND FLEXURAL STRENGTH**

**ABSTRACT**

**Background** *The mechanical properties of pulp-capping materials may affect their resistance to fracture during placement of a final restorative material or while supporting an overlying restoration over time when the mastication process is carried out. The combination of calcium hydroxide and propolis as a pulp capping material has the weakness on mechanical properties so it is necessary to add another material to improve its mechanical properties. Propylene glycol is used as a vehicle because it improves its handling property.* **Purpose** *to explain how the compressive and flexural strength of the pulp capping material in the combination of calcium hydroxide, propolis, and propylene glycol compared with the combination of calcium hydroxide and propolis* **Material and method** *The study used 4 treatment groups with each group consisting of 7 replications. Control group is a combination of calcium hydroxide-propolis with a ratio of 1: 1,5, group 1 is a combination of calcium hydroxide-propolis-propylene glycol 20% with a ratio of 1:1,5:0,375, group 2 is a combination of calcium hydroxide-propolis-propylene glycol 30% with a ratio of 1:1,5:0,375, and group 3 is a combination of calcium hydroxide-propolis-propylene glycol 30% with a ratio of 1:1,5:0,375. Materials were mixed according to comparison and printed on a cylindrical mold with the size of 4 mm x 6 mm and a block mold with the size 65 mmx10 mmx6 mm. Then, the compressive and flexural strength was tested using an Autograph test instrument.* **Result:** *The statistical analysis was performed with ANOVA and Tukey HSD's post-hoc test. There were statistically significant differences on compressive and flexural strength between groups ( $P < 0,05$ ).* **Conclusion:** *Addition of propylene glycol in the combination of calcium hydroxide and propolis have an influence of increasing of compressive and flexural strength, especially in the addition of 40% propylene glycol.*

**Keywords :** *compressive strength, flexural strength, calcium hydroxide, propolis, propylene glycol*