ABSTRACT

EFFECT OF PROPYLENE GLYCOL ADDITION IN COMBINATION OF CALCIUM HYDROXIDE AND PROPOLIS AGAINST SETTING TIME, CALCIUM ION, AND TOTAL FLAVONOID RELEASE

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ABSTRACT
Background: Calcium hydroxide, as the golden standard for pulp capping treatment, have some disadvantages such as high solubility and tunnel defect's formation. When it is combined with propolis, which has anti-inflammatory properties, it can improve the outcome: reparative dentin, but this combination has a longer setting time. Propylene glycol is used as an accelerator for this combination.
Objective: Evaluating of the effect of propylene glycol with 30%, 40%, and 50% in combination of calcium hydroxide and propolis extract based on its capability to release ion calcium and total flavonoid, and to accelerate the setting process.
Material and Methods: This experimental study using a total of 35 samples of material which randomly divided into 5 group, experimental group: combination of calcium hydroxide and Propolis extract group with addition of propylene glycol with different concentration (30%, 40%, 50%), calcium hydroxide group, and combination of calcium hydroxide and Propolis extract group. Setting time from each sample is measured using Gillmore Apparatus, ion calcium release is counted using Atomic Absorption Spectroscopy, and total flavonoid content using Spectrophotometer.
Results: The fastest setting time showed by combination of calcium hydroxide, propolis extract, and propylene glycol 30% group. The highest total flavonoid content showed by combination of calcium hydroxide, propolis extract, and propylene glycol 30% group. The highest ion calcium release showed by calcium hydroxide group. There were significant differences between all the group.
Conclusion: The addition of propylene glycol 30% and 40% can accelerate setting process without obstruct the release of ion calcium and total flavonoid.

Keywords: Calcium hydroxide, Propolis extract, propylene *glycol*, setting time, ion calcium, total flavonoid content

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DAFTAR SINGKATAN

AAS	= *Atomic Absorption Spectroscopy*
BMP	= *Bone morphogenetic protein*
Ca^{2+}	= Ion Kalsium
$Ca(OH)_2$	= Kalsium hidroksida
CAPE	= *Caffeic acid phenethyl ester*
MTA	= *Mineral trioxide aggregate*
PG	= Propylene glycol
SD	= Standar deviasi
TGFβ	= *Transforming growth factor beta*
TFC	= *Total Flavonoid Content*