

## ABSTRACT

### HEMA AND MMA IN ETANOL SOLVENT APLICATION EFFECT IN NUCLEAR FACTOR KAPPA BETA (NF- $\kappa$ B) AND TYPE 1 COLAGEN EXPRESION IN WISTAR RAT ODONTOBLAS CELL

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**Background:** HEMA and MMA which commonly used in dentin bonding have so many good effects in terms of enhancing bonding strength, but both of it are known to be able to cause inflammation.

**Objective:** Evaluating of the effect of HEMA and MMA with ethanol solvent on its capability to cause inflammation in odontoblast cells which is represented by expression of NF $\kappa$ B and Collagen type 1 in rat teeth model.

**Material and Methods:** This experimental study using a total of 30 maxillary first molar of wistar rat which then randomly divided into experimental combination of HEMA group, MMA group, and negative control group. The cavities then sealed with Cention. After 1 and 3 days, rats then sacrificed from each group, and sections of the teeth were obtained. After being decalcified, specimens underwent histological evaluation under light microscope to identify the presence of odontoblast-like cell. The immunohistochemistry (IHC) method using anti-NF $\kappa$ B and anti-Collagen type 1 was then performed to evaluate the expression of NF $\kappa$ B and Collagen type 1. The results then statistically evaluated by Kolmogorrov Smirnov, Levene's, and one way ANNOVA tests.

**Results:** MMA with ethanol solvent group to shows the most cells expressing NF $\kappa$ B and shows the least cells expressing Collagen type 1, followed by HEMA group, and negative control group as the least group expressing NF $\kappa$ B and the most group expressing Collagen type 1

**Conclusion:** HEMA and MMA with etanol solvent can cause inflammation. MMA cause greater inflammation than HEMA in terms of cells expressing NF $\kappa$ b and Collagen type 1

**Keywords:** *Hema, MMA, NF- $\kappa$ B, Collagen type 1*