ABSTRACT

THE DIFFERENCE OF MMP-1 AND TGF-β1 EXPRESSION IN ODONTOBLAST CELL AFTER APPLICATION OF DENTINE BONDING HEMA AND UDMA WITH ETHANOL SOLVENT

Background : *The dental adhesives are agents used to promote the bonding between the dental substrate and the resin materials. The most widely used hydrophilic and hydrophobic monomers of dental adhesives are 2-hydroxyethyl methacrylate (HEMA) and urethane dimethacrylate (UDMA). Ethanol is currently the solvent most often used in commercial dental adhesives. The resin monomers can diffuse through the dentinal tubules and reach the dental pulp, triggering odontoblast cell such as inflammation processes. The inflammation is initiated by intracellular signalling cascades, resulting in the release of anti- and pro-inflammatory mediator. MMP-1 and TGF-β1 are important mediators of odontoblast activity during inflammation and repair process.* **Objective :** *To analyze the difference of MMP-1 and TGF-β1 expression in odontoblast cells of maxillary rats first molar after application of denting bonding HEMA and UDMA with ethanol solvent.* **Mterial and Methods :** *The study was applied on 30 male Wistar rats, divided randomly and equally into 3 groups of ten rats each. Group I : negative control group was not conducted any treatment, Group II : HEMA with ethanol solvent and Group III : UDMA with ethanol solvent . The occlusal surface of maxillary rats first molar in group II and III were drilled until dentin using low speed round bur . The dental resin-based adhesive systems were applied to the drilled dentin. The rats were sacrificed after 1 day and 3 days, then evaluated by immunohistochemistry (IHC) method.* **Results :** *There were significant differences (p < 0,05) of MMP-1 expression after 1day and 3 days between group I and group II, group I and group III, and also group II and group III. Similarly, there were significant differences of TGF-β1 expression after 3 days between group I and group II, group I and group III, and also group II and group III, but there were no significant differences after 1 day.* **Conclusion :** *MMP-1 expression after application of HEMA with ethanol solvent was lower and TGF-β1 expression after application of HEMA with ethanol solvent was higher than application of UDMA with ethanol solvent after 1 day and 3 days.*

Key words : *HEMA, UDMA, MMP-1, TGF-β1, ethanol solvent*