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**Selective dentin etching: a potential method to improve bonding effectiveness of
universal adhesives**

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Abstract

Objectives:

To evaluate whether selective dentin etching protocols using reduced phosphoric acid (H₃PO₄) etching-times would affect the resin-dentin interaction of a universal adhesive to improve long-term bonding effectiveness.

Methods:

Mid-coronal flat dentin surfaces were produced on sound third molars, selectively etched with 32% H₃PO₄ for 3, 5, 10 or 15 s and bonded with a universal adhesive (Scotchbond Universal, 3M ESPE: SU). SU in self-etch mode and a three-step etch-and-rinse adhesive were used as control groups. Bonded specimens were stored in deionized water for 24 h and sectioned into beams (cross sectional area of 0.7 mm²). Micro-tensile bond strength test (n=6) and nanoleakage evaluation were performed immediately, after thermocycling or 6-month storage in artificial saliva. Energy dispersive X-ray analysis (n=6) was performed to determine the residual Ca-content ratio at the hybrid layers and scanning electron microscopy (SEM) was used to observe the micromorphology of the etched dentin surfaces before and after SU application. Data were analyzed by ANOVA and Tukey test ($\alpha=0.05$).

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