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The use of oxalate to reduce dentin permeability under adhesive restorations. D.H. PASHLEY, R.M. CARVALHO*, J.C. PEREIRA, F.R. TAY. (Med. Coll. of GA, Augusta, GA, USA; FOB USP, Brazil; Pr. Philip Hosp., Honk Kong, China).

1601

Postoperative sensitivity is a common drawback of adhesive restorations. This study tested the efficacy of monopotassium, monohydrogen oxalate (MKMHO) to seal etched dentin without compromising the bonding of adhesive systems. Flat dentin surfaces were created from the mid-crown of extracted human third molars. The entire surface was etched with 32% phosphoric acid gel (PA, Bisco) for 15 s and rinsed. Half the surface was treated with a 3% MKMHO for 2 min while the other half was kept moist with 3% NaCl. The surface was then blot-dried and bonded with either One Step (OS, Bisco) or Scotchbond Multi-Plus (SB, 3M) followed by a crown build-up with Z-100 resin composite. After 24 hs of storage in water at 37°C, the specimens were prepared for μ -tensile bond strength testing. Permeability testing was done sequentially on fresh dentin discs after creation of an intact smear layer; after etching with PA; after treatment with MKMHO and; after bonding with the adhesive systems. SEM was performed on the treated surfaces and bonded interfaces. Application of MKMHO to etched dentin reduced its permeability to approximately 20% of its max. Application of bonding agents further dropped it to virtual zero. Results were analyzed by RM ANOVA and pairwise Student-t test:

Adhesive	NaCl control / MPa \pm SD(N)	P value	3% MKMHO / MPa \pm SD(N)
O Step	25.9 \pm 9.2 (20)	0.5 NS	27.9 \pm 8.9 (20)
S Bond	23.0 \pm 7.9 (20)	0.9 NS	22.9 \pm 9.6 (20)

1705

SEM showed a sub-surface formation of crystals leaving the top 5 μ m of demineralized layer free for hybrid layer formation. The use of MKMHO plus adhesive systems reduced significantly the permeability of dentin and did not compromise bond strength. Supported by NICDR 06427, USA, and CNPq 300481/95-0 Brazil.

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5. Area of Review (check only one)

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