

Variables of Experimental Primer that Affect Adhesion Strength to Zirconia

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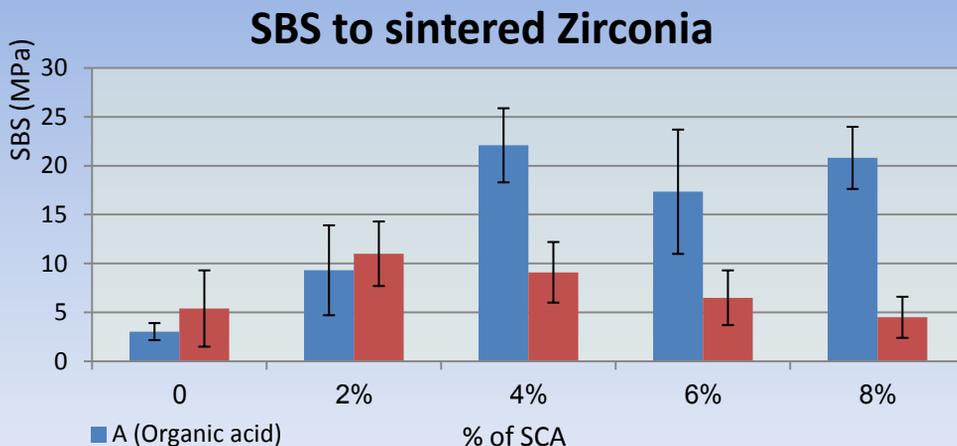
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Objectives: The purpose of this study is to evaluate the role of concentration of silane coupling agent (SCA) and of acid accelerator in experimental zirconia primer Q-Ceram (B.J.M. Laboratories, Or-Yehuda, Israel) on shear bond strength of adhesive resin cement (ARC) to zirconia-based ceramics

Materials and methods: water / ethanol master solution prepared and then divided into two separate beakers. Organic or strong acid was added to sample A and B respectively until pH value stabilized at 4.5. 5 samples were prepared of each solution A and B with SCA at concentrations 0-8%. Fully sintered zirconia blocks (Comprodent, Izmir, Turkey) were rinsed in pure ethanol and well dried. Zirconia specimens (n=8) with each one of primer samples of solutions A and B were prepared. Additional set of specimens was prepared with untreated zirconia and was used as a reference. Shear bond strength measured using material testing machine (Lloyd instruments) Gelatin capsules containing pre-polymerized ARC (High-Q Bond ARC, B.J.M. Laboratories, Or-Yehuda, Israel) were attached to zirconia surfaces with fresh ARC. All samples were irradiated with light-curing unit (Kerr) for 40sec and allowed to polymerize for additional 10min. Samples were aged at 37°C with ~100% relative humidity for 24hours prior to the SBS test.



Results:



Conclusions:

- within limitations of this work, the experimental primer that contains 4% of SCA and organic acid provides highest adhesion to zirconia surface.
- Surface conditioning of zirconia ceramics with Q-Ceram primer enhances the adhesion of resin cements to zirconia-based ceramics

Future work:

- to examine the effect of Q-Ceram primer on adhesion to other dental ceramic materials