Acidic environment effect on the push-out bond strength of mineral trioxide aggregate mixed with different liquids

---

Abstrak

Mineral trioxide aggregate (MTA) as retrograde filling is always in contact to inflamed tissues in periradicular area. Objective: To investigate the effect of acidic environment on push-out bond strength of MTA mixed with sterile water, local anesthetic, and 5% CaCl2 Methods: Thirty middle third of mandibular premolar roots were randomly assigned into 3 groups of 10 each. MTA mixed with sterile water (Group 1), local anesthetic (group 2), 5% CaCl2 (group 3). Each group was then divided into group A: soaked in synthetic tissue fluid with pH 5, and group B: pH 7.4. Specimens were stored in an incubator with a temperature of 370 C for 72 hours, undertaken a push-out test,
and observed under a stereo-microscope. Results: A two-way ANOVA showed that acidic environment reduced the push-out bond strength of MTA mixed with either sterile water, local anesthetic or 5% CaCl2 ($p < 0.05$). The predominantly failure was a mixture of adhesive and cohesive type. Conclusion: The acidic environment reduced the push-out bond strength of MTA mixed with either sterile water, local anesthetic or 5% CaCl2. MTA mixed with 5% CaCl2 produced the greatest push-out bond strength, whereas MTA mixed with local anesthetic had the lowest push-out bond strength.