

## Support Information

### Premixed magnesium phosphate based sealer with anti-biofilm ability for root canal filling

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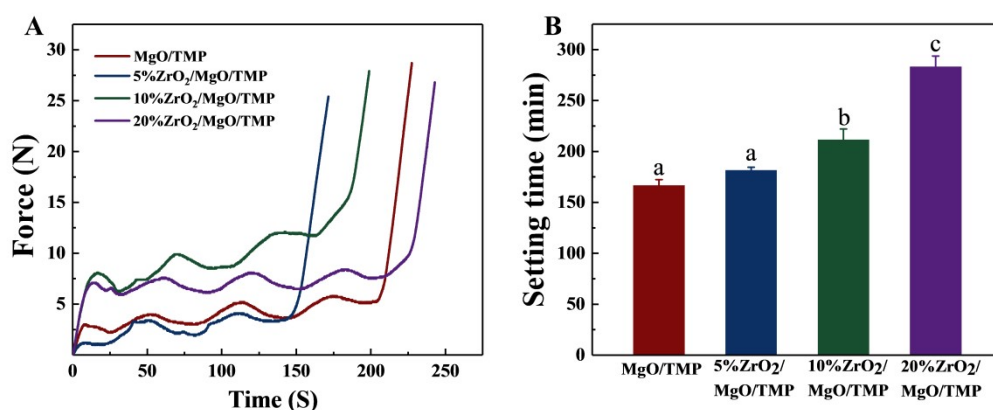


Fig.S1.Properties of premixed sealers with different ZrO<sub>2</sub> incorporation:(A) Force of the syringe containing the sealers during injection;(B) Setting time of the sealers in water bath at 37°C and 100% humidity(n=3).

Dissimilar letters indicate values that are significantly different from each other (p < 0.05).

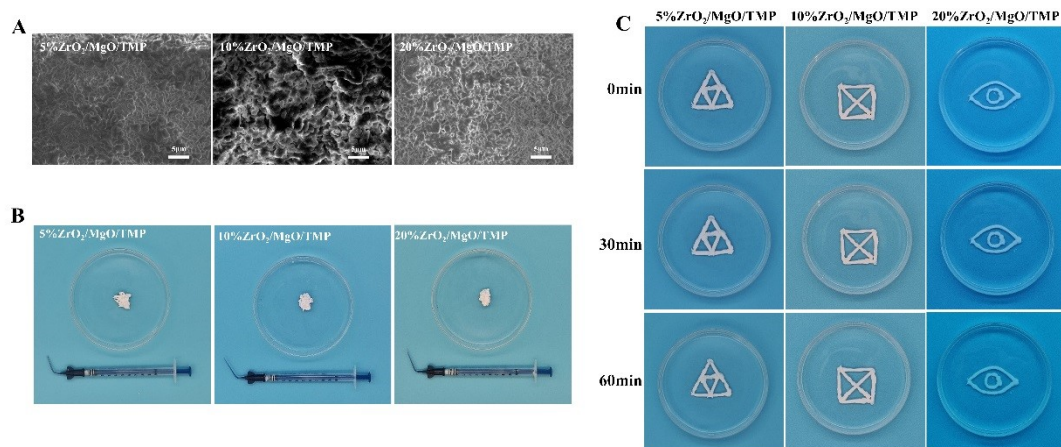


Fig.S2. Properties of the premixed sealers with addition of different amount of ZrO<sub>2</sub>. (A)SEM images of

fractured surface after curing under the environment of 37°C and 100% humidity for 3 days; (B)Injectability;

(C) Washout resistance test at 0min,30min,60min.

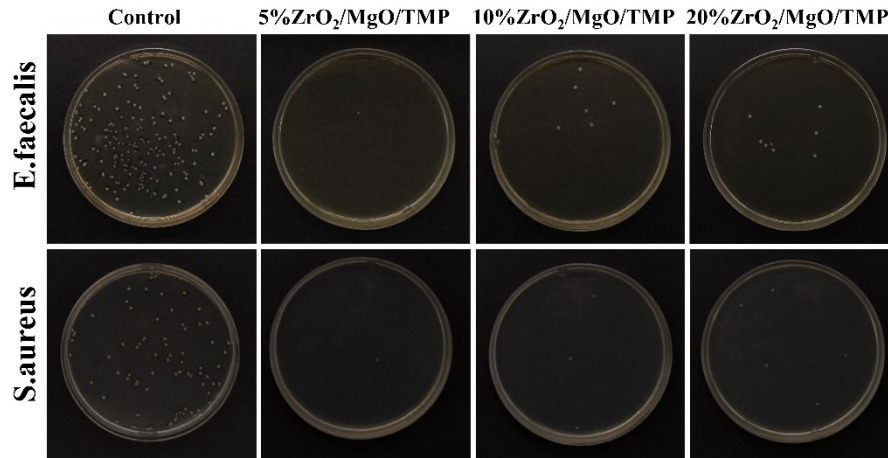


Fig.S3. Antibacterial effect in vitro: photographs of S.Aureus and E.faecalis colonies on BHI agar.

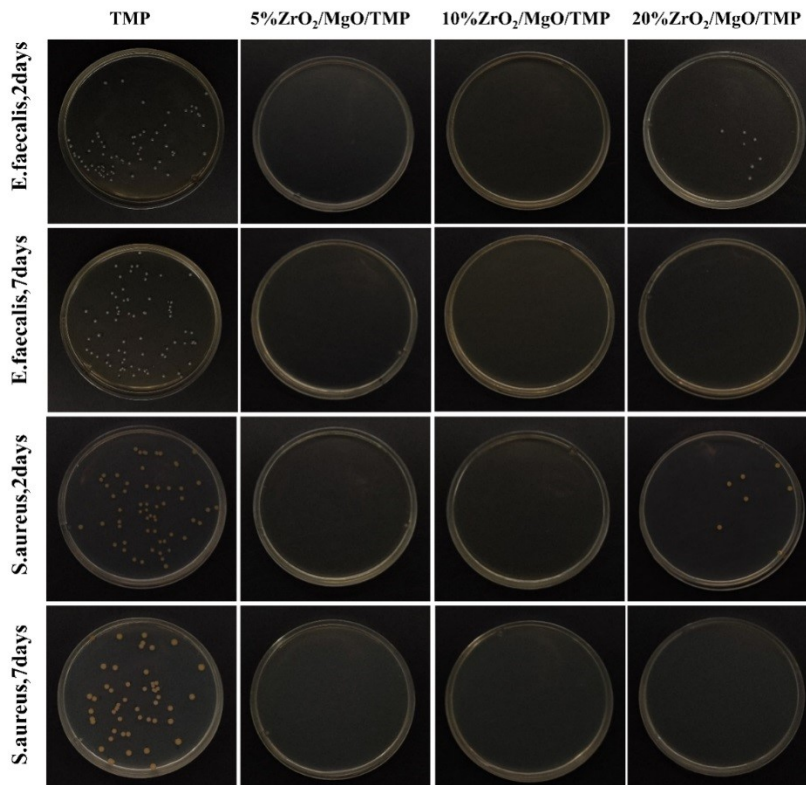


Fig.S4. Inhibition effect of the sealers on biofilm formation: Photographs of S.Aureus and E.faecalis colonies

on BHI agar, bacteria were harvested from the surface of the cured sealer immersed in bacterial suspension.

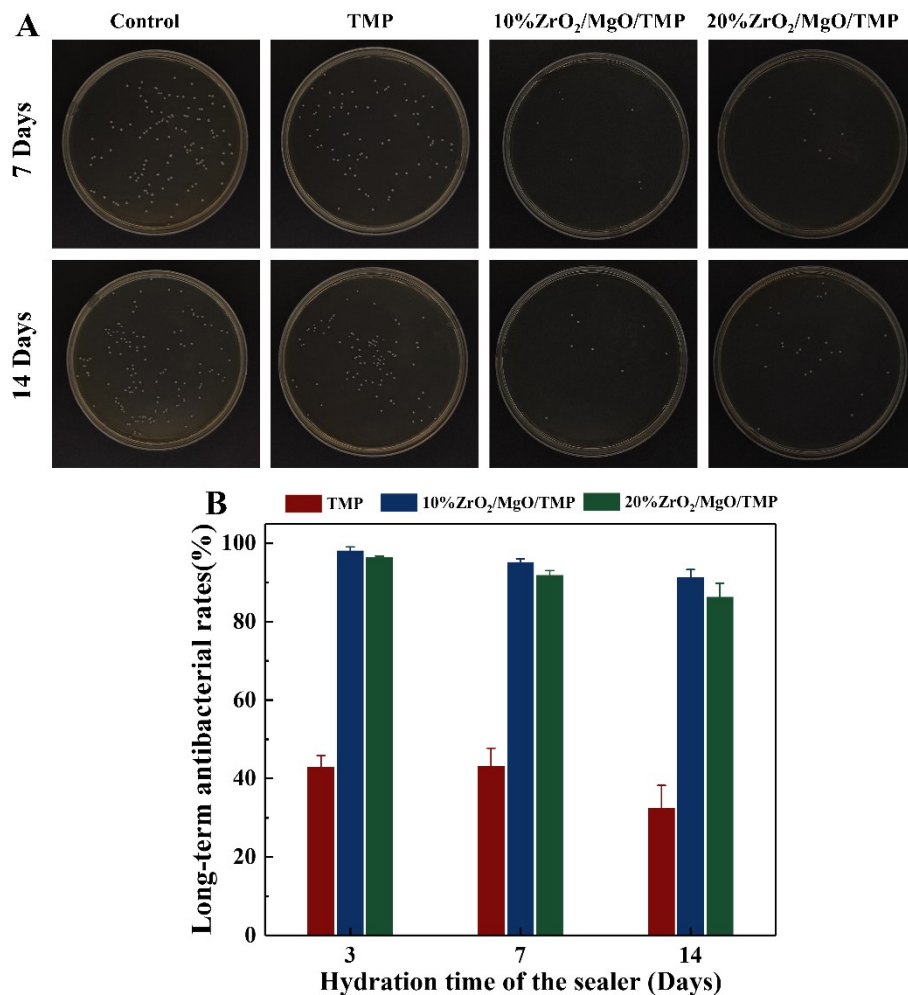


Fig.S5. Long-term antibacterial effect of the sealers. (A)Photographs of *E.faecalis* colonies on BHI agar, bacteria were co-cultured with sealers of different hydration times for 24h; (B)Long-term antibacterial rates of sealers with different componets, the antibacterial rate on 3 days was derived from Fig.3B and Fig.5E(n=3).

Table.S1: pH changes of PBS solution contained cured sealer with different components (0.2 g/mL)

Time (Days)	1	3	7	14	Two days after the PBS replaced
TMP	8.99	8.98	9.02	9.06	8.41
MgO/TMP	12.12	12.27	12.38	12.42	11.31
20%ZrO <sub>2</sub> /MgO/TMP	12.18	12.25	12.27	12.33	11.19