

Electronic Supplementary Information (ESI†)

Enhanced Antibacterial Activity of Acid Treated MgO Nanoparticles on *Escherichia coli*

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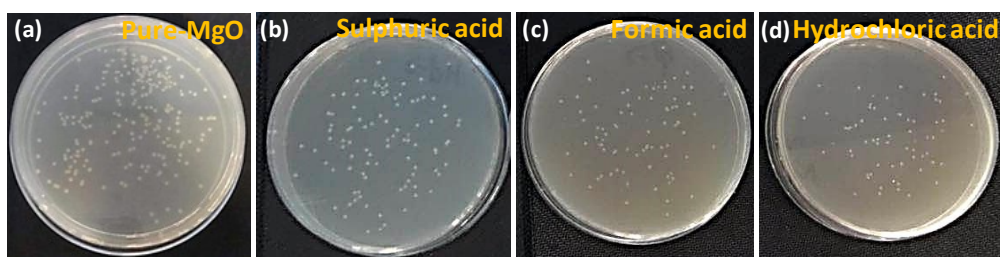


Fig. S1 The representative photographs for the surviving *E. coli* colonies of Pure-MgO (a) and samples treated with different acidic solutions (pH=2) for 1 h, sulphuric acid (b), formic acid (c) and hydrochloric acid (d).

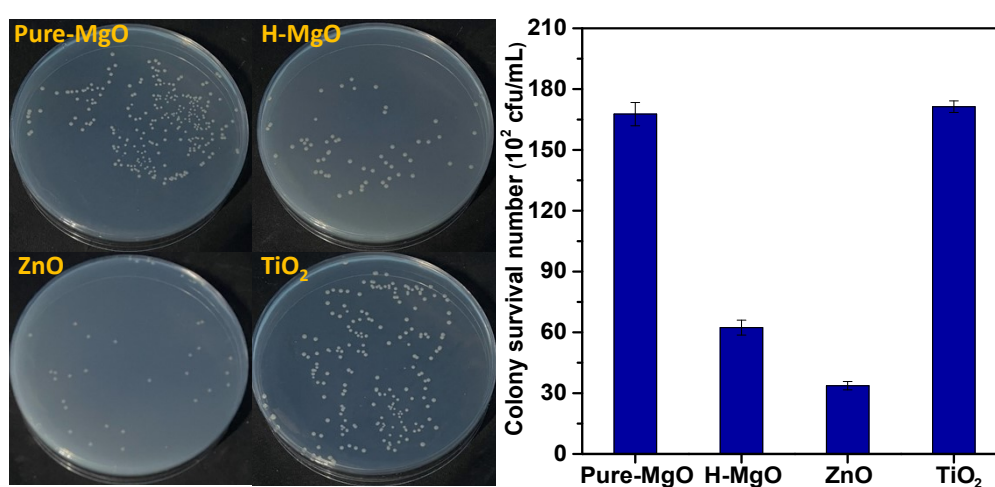


Fig. S2 The antibacterial activities against *E. coli* of Pure-MgO, H-MgO, ZnO (AR, Tianjin Guangfu Fine Chemical Research Institute, China) and TiO₂ (P25, Degussa, Germany) with 750 $\mu\text{g/mL}$ at 4 h.

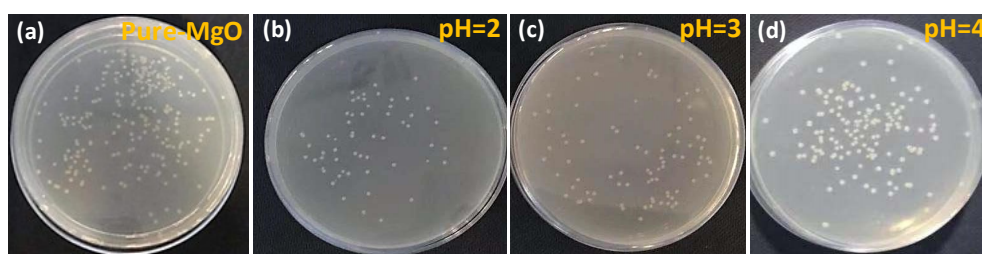


Fig. S3 The representative photographs for the surviving *E. coli* colonies of Pure-MgO (a) and MgO NPs treated with hydrochloric acid for 1 h at different pH, pH=2 (b), pH=3 (c) and pH=4 (d).

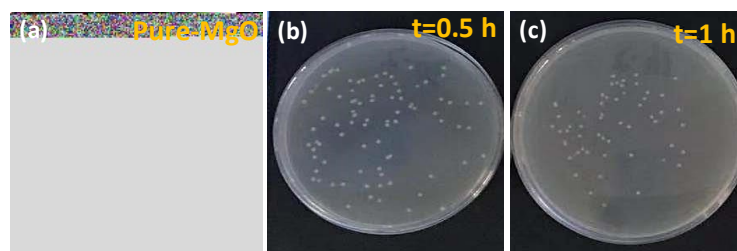


Fig. S4 The representative photographs for the surviving *E. coli* colonies of Pure-MgO (a) and MgO NPs treated with hydrochloric acid at pH=2 for different treatment time, $t=0.5$ h (b) and $t=1$ h (c).

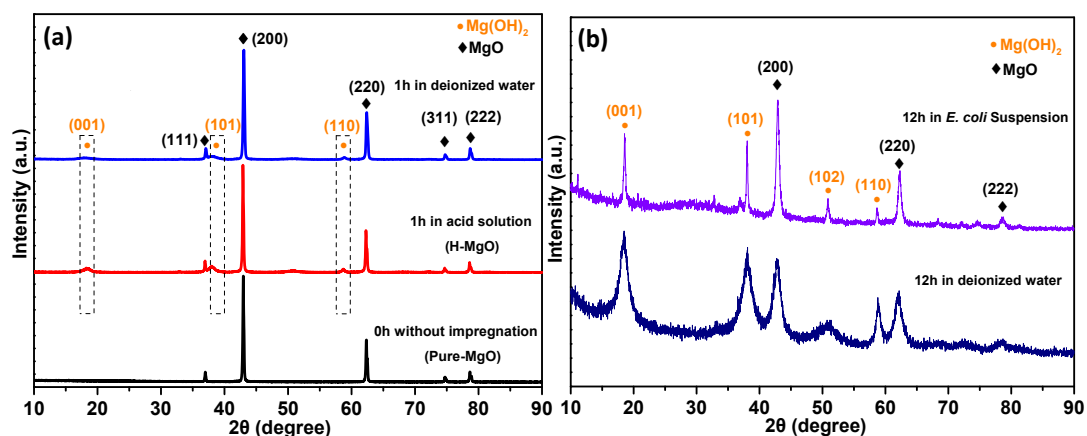


Fig. S5 XRD patterns of Pure-MgO, H-MgO and Pure-MgO impregnated in deionized water for 1 h (a) and Pure-MgO impregnated in deionized water and *E. coli* suspension for 12 h respectively (b).

The Pure-MgO samples were impregnated in deionized water for 1 h, 12 h and in *E. coli* (10^8 CFU/mL) suspension for 12 h respectively. After impregnation, the samples were collected by centrifugation at 9000 rpm for 5 min and then dried in the oven at 110 °C for 12 h. Then, the obtain samples were analyzed by XRD.

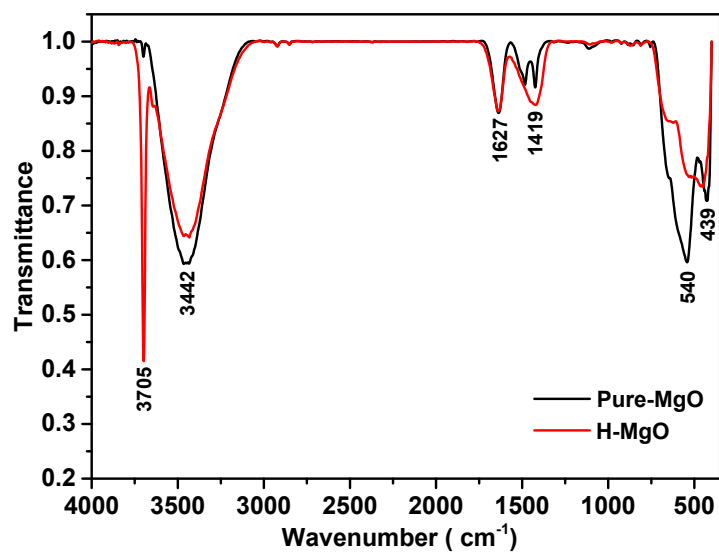


Fig. S6 FTIR spectra of Pure-MgO and H-MgO.

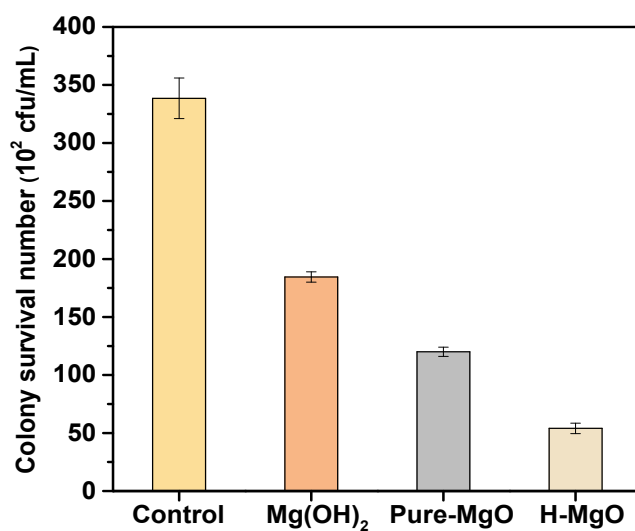


Fig. S7 The antibacterial activities of $\text{Mg}(\text{OH})_2$, Pure-MgO and H-MgO on *E. coli*.

Table S1 The lattice parameters of Pure-MgO and H-MgO determined from XRD.

Samples	2-Theta (°)	FWHM (°)	<i>d</i> -Spacing (Å)	Crystallite size (nm)
Pure-MgO	42.942	0.184	2.1044	45.9
H-MgO	42.897	0.216	2.1065	39.1