

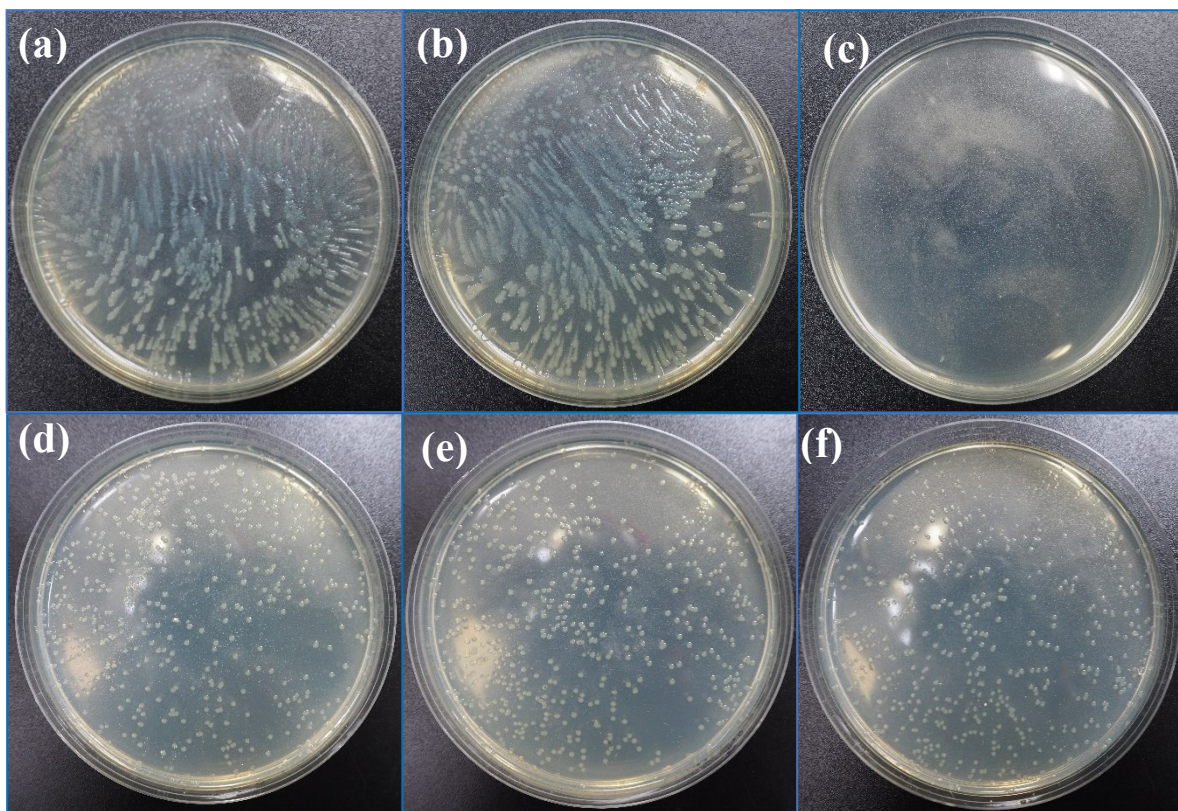
## Synthesis and Characterizations of Natural Limestone-Derived Nano-Hydroxyapatite (HAp): A Comparison Study of Different Metals Doped HAp on Antibacterial Activity

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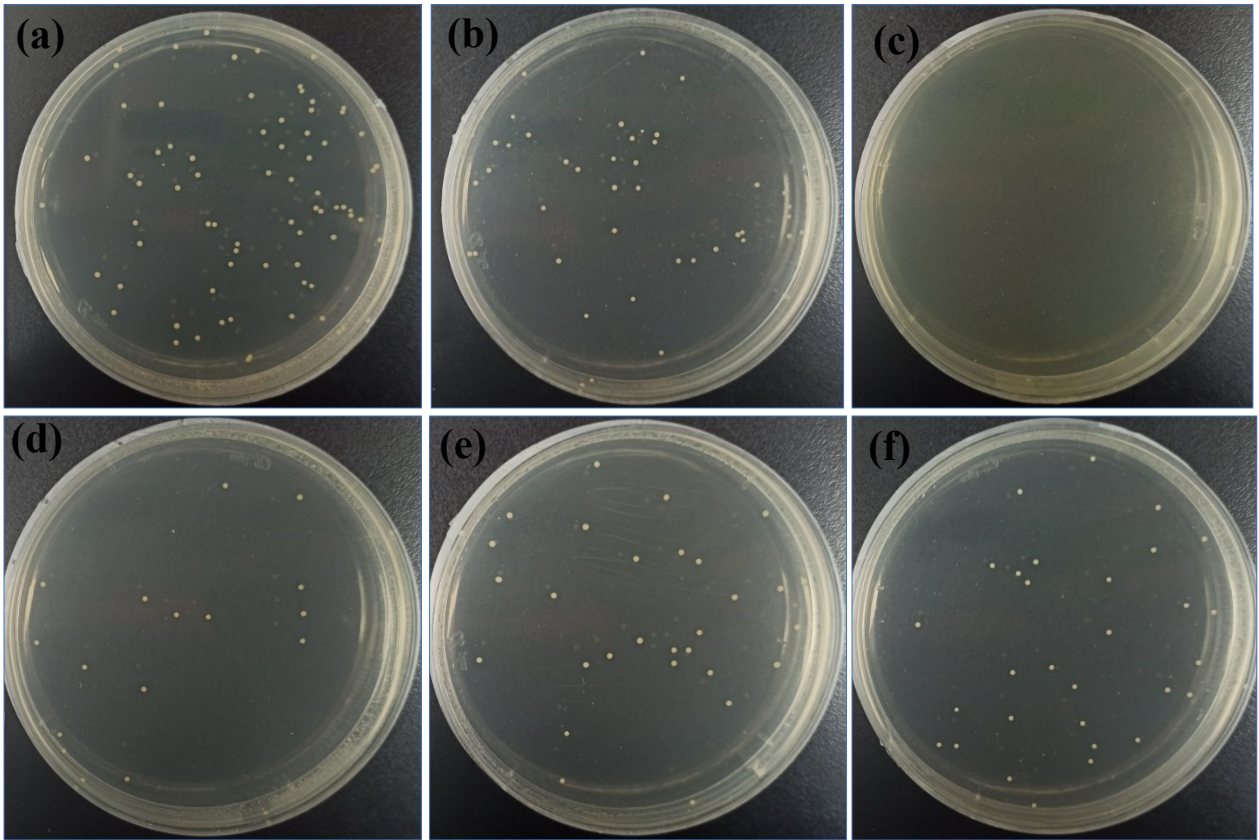
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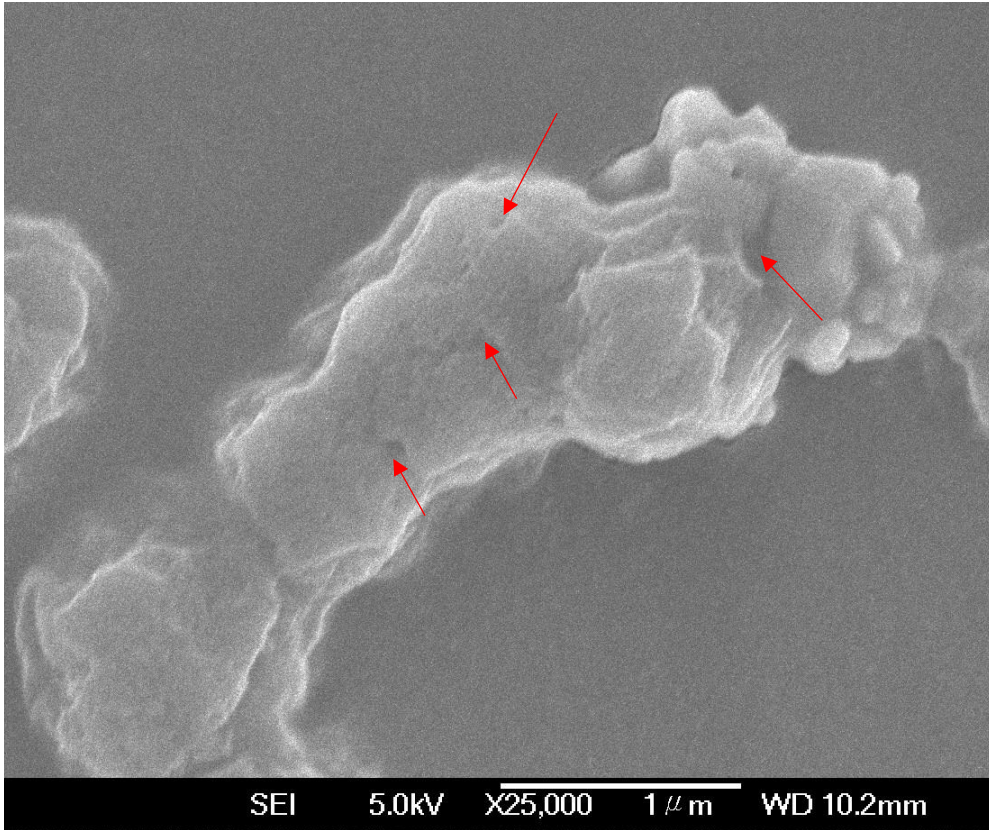


**Figure S1.** Photograph images of the antibacterial tests of (a) control (b) pristine HAp, (b) Ag-, (c) Zn-, (d) Cu-, and (e) Mg-HAp toward *E. coli* bacteria on Petri dishes.



**Figure S2.** Photograph images of the antibacterial tests of (a) control (b) pristine HAp, (b) Ag-, (c) Zn-, (d) Cu-, and (e) Mg-HAps toward *S. aureus* bacteria on Petri dishes.





**Figure S2.** Scanning electron microscope images of death *E. coli* bacteria. Red arrows to show the disruptive membrane.