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Synthesis and investigation of antibacterial behavior of $Zn_{1-x}Cu_xO$(Ag) hybrid nanocomposite

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According to the development of human life, control of the harmful effects of microorganisms is unavoidable. In the last decade, the development of nanotechnology has created opportunities to discover the antimicrobial effects of nanoparticles. In recent years, too much use of antibiotics causes many problems including poisonous effects and creating resistant types. Therefore, nanoparticle metal oxides have attracted deal attention. In this present work, the preparation of $Zn_{1-x}Cu_xO$ hybrid nanocomposites Ag-doped has been reported. Polyethylene glycol was used as a stabilizer of nanoparticles to control the morphology and size of nanomaterials. FTIR, EDX, XRD, and SEM techniques investigate their structural, superficial, and morphological properties. The antibacterial behaviour of prepared nanoparticles was investigated against Gram-negative, Gram-positive Bacteria, and fungus showed excellent antibacterial activity. However, they were generally more sensitive to hybrid nanomaterials towards ZnO and CuO nanoparticles.

Keywords: Ag-doping, Polyethylene glycol, Co-precipitation, Antimicrobial agent, Hybrid nanocomposite.

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