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Impediment of bacterial growth and biofilms via surface engineering of Ag@ZnO

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Bacterial biofilms are widely associated with persistent infections. Prevalent virulence and high resistance to conventional antibiotics makes biofilms tough to be eliminated. Hence biofilms are regarded as good therapeutic targets. Herein, Ag-doped zinc oxide (ZnO) nanoparticles for the treatment biofilm inhibition and pre-formed biofilms were prepared by sol-gel method. The saturated crystalline phase was checked by varying the concentration of capping agent (hexylamine) and the morphology of nanoparticle that was tuned by varying capping agent structure (heptylamine and octylamine) with increasing alkyl chain. The P-XRD analysis confirmed the ZnO@Ag formation and further annealing increased the crystallinity and surface morphology of the composite. The antibiofilm effect was studied using live and dead cell assay. It is evident that the size of ZnO nanoparticles decreases after Ag doping and a small amount of Ag is doped onto ZnO crystal. Further, ZnO@Ag NPs are well characterized by FE-SEM, HR-TEM to study the surface morphology and UV-Vis-DRS for its optical absorption and band gap studies. Therefore, Ag doping can markedly promote the biofilm inhibition and pre-formed antibiofilm activity of ZnO nanoparticles.

Biography

D Yuvapriya is working as a Trainee Scientific Relation at OMICS International. She was graduated with honor from Sastra University with a Master's degree in Medical Nanotechnology. She is experienced in handling laboratory instruments, organizing events and teaching. She is interested in research on smart nanosystems.

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