

Zinc oxide and Cobalt oxide nanoparticles anti-bacterial activity in comparison to synthesized forms in a surfactant and the surfactant itself.

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Abstract

Nowadays, nanotechnology is gaining great concerns in many fields related to human health and environment protection. One of these fields of most concern is the control of the bacterial infection in a manner friendly to human and the environment without forcing the bacterial population to emerge as multidrug resistant strains.

In this study, size selective synthesis of ZnO and CoO nanoparticles is being prepared electrochemically and by reduction method. Stabilization was achieved with alkyl quaternary ammonium compound surfactants. From biological point of view, clinical isolates of *Staphylococcus aureus*, *Bacillus subtilis* and *Escherichia coli* were used for testing the antibacterial activity of the metallic oxide nanoparticles and the stabilized forms in the surfactants.

Antibacterial activity of the surfactants, metallic oxide nanoparticles and the surfactants stabilized metallic oxide nanoparticles were compared from minimum inhibitory concentration (MBC) and minimum bactericidal concentration (MIC). Dose response curves were applied when applicable to support the data of MIC and MBC concentration. The surfactant, the metallic oxide nanoparticles and the surfactant stabilized metallic oxide nanoparticles showed a comparable antibacterial activity that could reflect each material characteristics in comparison to the bacterial strains biological characteristics.