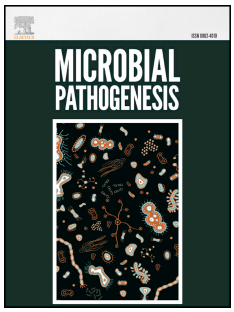
Accepted Manuscript



Enhancing using glucose encapsulation, the efficacy of CdO NPs against multi-drug resistant *Escherichia coli*

Manaal Zahera, Shamim Ahmad Khan, Irfan Ali Khan, Abdallah M. Elgorban, Ali H. Bahkali, Saud M. Elghamdi, Mohd Sajid Khan

PII: S0882-4010(17)31732-1

DOI: 10.1016/j.micpath.2018.04.011

Reference: YMPAT 2890

To appear in: *Microbial Pathogenesis*

Received Date: 18 December 2017

Revised Date: 28 March 2018

Accepted Date: 6 April 2018

Please cite this article as: Zahera M, Khan SA, Khan IA, Elgorban AM, Bahkali AH, Elghamdi SM, Khan MS, Enhancing using glucose encapsulation, the efficacy of CdO NPs against multi-drug resistant *Escherichia coli*, *Microbial Pathogenesis* (2018), doi: 10.1016/j.micpath.2018.04.011.

Enhancing Using Glucose Encapsulation, the Efficacy of CdO NPs against Multi-Drug Resistant *Escherichia coli*

Manaal Zahera[a], Shamim Ahmad Khan[b], Irfan Ali Khan[b], Abdallah M. Elgorban[c], Ali H. Bahkali[c], Saud M. Elghamdi[c], Mohd Sajid Khan[a]*

[a]*Nanomedicine & Nanobiotechnology Lab, Department of Biosciences, Integral University, Lucknow- 226026, India.*

[b]*Department of Physics (Nanoscience), Integral University, Lucknow- 226026, India.*

[c]*Department of Botany and Microbiology, College of Science, King Saud University, Riyadh, 11451, Saudi Arabia.*

Abstract

In this study, monodispersed, highly biocompatible and substantially stable glucose encapsulated CdO nanoparticles (G-CdO NPs) of uniform sizes were synthesized using a sol-gel route. In addition, naked CdO (n-CdO) NPs without any capping or surface functionalization were synthesized using the same method.These NPs were uniformly dispersed in an aqueous solution. The synthesis of G-CdO and n-CdO NP was confirmed by UV-Vis spectroscopy, transmission electron microscopy (TEM), zeta potential, and dynamic light scattering analyses.The average size of G-CdO and n-CdO NP was found to be 17±1and 27±1 nm, under TEM, respectively. X-ray diffraction analysis of G-CdO and n-CdO NPs confirmed their sizes to be 18.83 and 28.41 nm, respectively, and revealed their cubic crystal structureswith no impurity. The surface functionalization of G-CdO NPs with glucose was confirmed by Nuclear Magnetic Resonance and Fourier-transform infrared spectroscopy analyses.As per our knowledge, this is the first report to investigate the potencies of G-CdO and n-CdO NPs against gram-negative and gram-positive multi-drug resistant (MDR) bacteria. The minimum inhibitory concentrations of G-CdO and n-CdO NPs were6.42 and