Editorial
Volume 12:1, 2021

Chemical Sciences Journal

ISSN: 2150-3494 Open Access

Bacterial Culture on ZnO and Pb $(NO_3)_2$ Nanoparticles

Hideharu Shintani

Editor-in-Chief of Chemical Sciences Journal, and Professor in Department of Medical Devices, Chuo University, Japan

Editorial Note

The most abundant organisms in our biosphere are bacteria as *Escherichia coli*. Slight climate changes can potentially be disastrous to the life processes of bacteria; this can result in the prolific advantage for the production of nanoparticles. On the other hand synthesis of metal nanoparticles by eukaryotic cells such as fungi *Aspergillus niger* is reported. *A. niger* have the advantage of producing very high yields of secreted proteins, which may increase nanoparticle synthesis rate. *Mycelia* provide a much higher surface area than bacteria and this area could be used to support the interaction of metal ions and fungal reducing agent thus enhancing the reduction of metal nanoparticles. The bio reduction of NPs was monitored by ultraviolet-visible spectroscopy, and the nanoparticles obtained were characterized by electron microscopy. In bacterial culture ZnO and $Pb(NO_3)_2$ NPs have sharp absorbance with the highest peak at 300 nm and 250 nm respectively. On the other hand, in fungal culture ZnO and $Pb(NO_3)_2$ NPs have highest absorbance peak at 230 nm and 240 nm respectively. The synthesized NPs (fungal biomass) were almost spherical in shape and some of them were aggregated ranging in size from 30 nm to 70 nm and 10 nm to 50 nm stabilized in the solution. Furthermore, the antimicrobial potential of zinc and lead nanoparticles was systematically evaluated. The synthesized nanoparticles could efficiently inhibit various pathogenic organisms, *P. aeruginosa* and *S. aureus*. The bactericidal effect of zinc and lead nanoparticles were compared based on diameter of inhibition zone in agar diffusion assay, disc method tests and minimum inhibitory concentration (MIC).

How to cite this article: Hideharu Shintani. "Bacterial Culture on ZnO and $Pb(NO_3)_2$ Nanopasrticles." *Chem Sci J* 12 (2021).

***Address for Correspondence:** Hideharu Shintani, Editor-in-Chief of Chemical Sciences Journal, and Professor in Department of Medical Devices, Chuo University, Japan, E-mail: shintani@mail.hinocatv.ne.jp*

Received 01 January 2021; **Accepted** 15 January 2021; **Published** 19 January 2021