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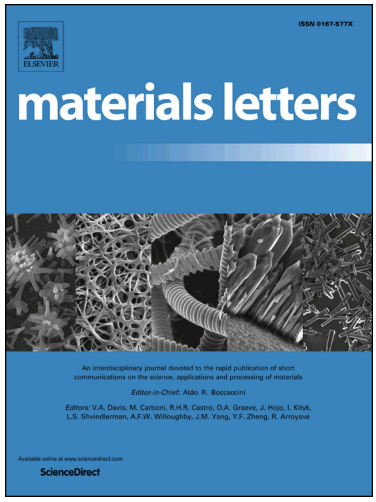

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PII: S0167-577X(18)31449-6
DOI: https://doi.org/10.1016/j.matlet.2018.09.075
Reference: MLBLUE 24943

To appear in: *Materials Letters*

Received Date: 28 June 2018
Revised Date: 1 September 2018
Accepted Date: 14 September 2018

Please cite this article as: F. Ibrahim, M.H. Aziz, M. Fatima, F. Shaheen, S.M. Ali, Q. Huang, *In Vitro* Cytotoxicity, MMP and ROS Activity of Green Synthesized Nickel Oxide Nanoparticles using Extract of Terminalia Chebula against MCF-7 Cells, *Materials Letters* (2018), doi: https://doi.org/10.1016/j.matlet.2018.09.075

In Vitro Cytotoxicity, MMP and ROS Activity of Green Synthesized Nickel Oxide Nanoparticles using Extract of Terminalia Chebula against MCF-7 Cells

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Abstract

Nanotechnology has been offered the prospect for the development of novel nanomaterials with countless potential applications in natural sciences and clinical pharmaceutical. This study described the analysis of green synthesized nickel oxide nanoparticles (NPs) using the extract of Terminalia chebula. The Green synthesized NiO NPs were characterized by Transmission Electron Microscopy (TEM), X-ray diffraction (XRD), Fourier transform infrared spectroscopy (FTIR), energy dispersive X-rays Analysis (EDAX) and ultraviolet-visible spectroscopy (UV-Vis). Green synthesized NiO NPs displayed the toxicity to breast cancerous cells in a dose-dependent way from 0-100 µg/mL showing noticeable cell viability, Reactive oxygen species (ROS) activity and liberating of mitochondrial membrane potential (MMP). The statistical scrutiny was also done on the experimental outcomes to check the value and precision of the effects, with p-values < 0.05 selected as significant. The planned approach deliberates the NiO NPs as a function of phenolic extracts of T. chebula with vast potential for several biological and biomedical applications.

Keywords:

Cytotoxicity; Reactive Oxygen Species; Mitochondrial Membrane Potential; Green Synthesis

Introduction

Nanobiotechnology is the most recent and emerging interdisciplinary branch of nanotechnology and cell biology. Nanotechnology, nanoparticles, and Nano-medicines are imperative segments for the investigation and therapeutic applications in the treatment of cancer [1,2]. Metal oxide Nanoparticles are the always the basic structural chunks