

## Accepted Manuscript

Green synthesis: *In-vitro* anticancer activity of copper oxide nanoparticles against human cervical carcinoma cells

P.C. Nagajyothi, P. Muthuraman, T.V.M. Sreekanth, Doo Hwan Kim, Jaesool Shim

PII: S1878-5352(16)00022-8

DOI: <http://dx.doi.org/10.1016/j.arabjc.2016.01.011>

Reference: ARABJC 1834

To appear in: *Arabian Journal of Chemistry*

Received Date: 3 November 2015

Accepted Date: 28 January 2016

Please cite this article as: P.C. Nagajyothi, P. Muthuraman, T.V.M. Sreekanth, D.H. Kim, J. Shim, Green synthesis: *In-vitro* anticancer activity of copper oxide nanoparticles against human cervical carcinoma cells, *Arabian Journal of Chemistry* (2016), doi: <http://dx.doi.org/10.1016/j.arabjc.2016.01.011>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



**Green synthesis: *In-vitro* anticancer activity of copper oxide nanoparticles against human cervical carcinoma cells**

P.C.Nagajyothi<sup>1#</sup>, P. Muthuraman<sup>2#</sup>, T.V.M. Sreekanth<sup>3</sup>, Doo Hwan Kim<sup>2</sup>, Jaesool Shim<sup>1\*</sup>

<sup>1</sup>School of Mechanical Engineering, Yeungnam University, 214-1 Dae-dong, Gyeongsan-si, Gyeongsangbuk-do 712-749, Republic of Korea.

<sup>2</sup>Dept of Bioresources and Food Science, Konkuk University, Seoul, South Korea.

<sup>3</sup>School of Chemical Engineering, Yeungnam University, 214-1 Dae-dong, Gyeongsan-si, Gyeongsangbuk-do 712-749, Republic of Korea.

---

**# These authors contributed equally to this work**

**Running title:** CuO nanoparticles and HeLa cells

\*Corresponding author: **Prof. Jaesool Shim** E-mail: jshim@ynu.ac.kr, Tel: +82-53-810-2465  
Fax: +82-53-810-4627

**Abstract**

Copper oxide nanoparticles (CuO NPs) were synthesized by a green route using an aqueous black bean extract and characterized by XRD, FT-IR, XPS, Raman spectroscopy, DLS, TEM, SAED, SEM, and EDX. The synthesized CuO NPs were spherical in shape, and the XRD results show the average size of the NPs was ~26.6 nm. The cytotoxic effect of the CuO NPs was determined by sulphorhodamine-B assay. Mitochondria-derived reactive oxygen species (ROS) were increased and initiated lipid peroxidation of the liposomal membrane, which regulates several signaling pathways and influences the cytokinetic movements of cells. Mitochondrial fragmentation disruption assay confirmed the alteration in the mitochondrial structure after incubation with nanoparticles. In addition, clonogenic assay confirmed the inability of NPs incubated cancer cells to proliferate well. Our experimental results show that the CuO NPs can induce apoptosis and suppress the proliferation of HeLa cells.

Download English Version:

<https://daneshyari.com/en/article/5142293>

Download Persian Version:

<https://daneshyari.com/article/5142293>

[Daneshyari.com](https://daneshyari.com)