

PubMed

Abstract

Full text links

ELSEVIER
FULL-TEXT ARTICLE

Colloids Surf B Biointerfaces. 2015 Apr 1;128:276-86. doi: 10.1016/j.colsurfb.2015.01.052.
Epub 2015 Feb 7.

Biogenic silver nanoparticles from *Abutilon indicum*: their antioxidant, antibacterial and cytotoxic effects in vitro.

Mata R¹, Nakkala JR¹, Sadras SR².

Author information

Abstract

Green synthesis of silver nanoparticles using biological entities is gaining interest because of their potential applications in nano-medicine. Herein, we report the biological synthesis of *Abutilon indicum* silver nanoparticles (AIAgNPs) using aqueous *Abutilon indicum* leaf extract (AILE) and evaluation of their biological applications. TEM analysis revealed that the spherical biogenic AIAgNPs were found to be between 5 and 25 nm in size. The bioactive phyto-constituents such as condensed tannins of AILE were found to play a key role in the reduction and capping of AIAgNPs. The biological properties of AIAgNPs were premeditated as free radical scavenging activity, antibacterial effect and anti-proliferative activity. AIAgNPs were found to exhibit good free radical scavenging activities and the intense zone of inhibition displayed by them in six different pathogenic species indicate the potential antibacterial effect. Further, AIAgNPs showed a dose dependant anti-proliferative effect against COLO 205 (human colon cancer) and MDCK (normal) cells with an IC₅₀ of 3 and 4 µg/mL and 100 and 75 µg/mL, respectively after 24 and 48 h. The morphological changes, chromatin condensation and membrane potential loss induced by AIAgNPs were evidenced by AO/EB and AnnexinV-Cy3 staining. The mitochondrial membrane potential (MMP) loss and G1/S transition cell cycle arrest in COLO 205 cells was evidenced in rhodamine123 staining and FACS analysis. The high levels of ROS as shown in DCF-DA staining could have

played a major role in DNA fragmentation and eventually lead to apoptosis. The mode of action through the induction apoptosis by AIgNPs in COLO 205 cells is exciting with promising application of nano-materials in biomedical research.

Copyright © 2015 Elsevier B.V. All rights reserved.

KEYWORDS: *Abutilon indicum* silver nanoparticles; Antibacterial; Apoptosis; DNA fragmentation; ROS generation

PMID: 25701118 [PubMed - in process]

Publication Types

LinkOut - more resources

PubMed Commons

[PubMed Commons home](#)

0 comments

[How to join PubMed Commons](#)