INORGANIC AND NANO-METAL CHEMISTRY
https://doi.org/10.1080/24701556.2020.1852254

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REVIEW

Plant mediated synthesis of AgNPs and its applications: an overview

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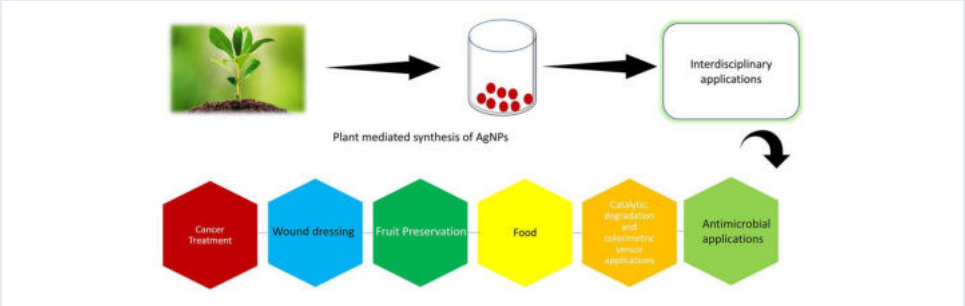
ABSTRACT

Plant mediated synthesis of nanoparticles is a path breaking approach to fabricate ecologically friendly nanoparticles which can be utilized in various applications. The majority of the existing procedures used for nanoparticles synthesis rely up on chemical and physical methods, these methods are sometimes harmful and potentially dangerous to the environment and living organisms. But synthesis of nanoparticles in a green way using plant extract is a unique, systematic, affordable, and environmentally sound method for synthesizing nanoparticles with selective and specific properties and applications. In this article, the potential applications of plant mediated synthesized noble metal NPs, especially silver is discussed. It is astonishing to understand how a tiny particle is influencing our whole life and that's high lightened in this article.

GRAPHICAL ABSTRACT



ARTICLE HISTORY
Received 19 July 2020
Accepted 18 October 2020

KEYWORDS
Green pathway; silver nanoparticles; applications; biosynthesis

Introduction

Nanotechnology is a plot twist in the whole universe's fate. The never ending desire and intelligence of human beings paved way for astonishing inventions like internet, rockets, smart phones, *in vitro* fertilization techniques and even artificial intelligence[1] that created many moral issues. Such an area of science was nanotechnology, which was considered to be forbidden in the earlier period due to the moral issues that it may develop. Overcoming all those futile statements, nanotechnology and nanoparticles has advanced in such a way that they are even capable of producing entities possessing bio like functions.[2] Microscopic particles with diameter less than 100 nm are called as nanoparticles.[3] The nanometer is a point where the smallest man made instruments meet the atoms and molecules. The global useful applications of metal nanoparticles are indebted to their innumerable unique properties. They can be fabricated using a number of techniques and can be functionalized accordingly to apply for various functions. Being the smallest particle of a bulk object, it expresses enhanced properties as more atoms are present on its surface having less coordination number than its bulk.[3] Nanotechnology and nanoparticles became the base of future science and engineering due its rapid applications in areas including energy, memory and optical storage devices, biomedicine, antireflective and fog resistant protective coatings, construction, textiles, solar cells, sensors in defence field, and also because of the contributions it may provide to the economy and environment.[4] It can be firmly said that the next big thing is really too small.

Metal nanoparticles are astronomically exploited on account of their distinctive properties like reactivity, physical properties, and probable applications in enormous research areas like antimicrobial, diagnostic, antioxidant, and specific drug delivery.[5] When compared to the bulk counterparts, the nanoparticles of the same will have enhanced properties like morphology, size, and increased surface area. The nanoparticle properties are found to alter based on the synthetic methods. Therefore, the method of synthesis alerts the attention of use of nanoparticles. Nanomaterial production can be obtained mainly through chemical, biological, and physical procedures (Figure 1). The fabrication of nanoparticles by chemical and

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