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Mini Review

Green Synthesis of Cadmium Sulfide, Plant Extracts or Organisms Metabolite: Mini Review

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Abstract

Cadmium Sulfur (Cds) is a quantum dot in the size of "Nano". Cds NPs are widely using for diagnostic purposes and as a tool for site-specific gene and drug delivery. Synthesize of Cds because of the medical usage area is very important. The Green synthesis of Cds provides reliable, environmentally friendly, and less toxic alternatives. Plant extract because of various phenolic and active ingredient are widely use for NPs synthesize in compare to bacterial metabolites. In addition, the safety of plant extract is higher than bacterial metabolites.

Keywords: Cadmium Sulfide; Green Synthesize; Plant Extracts; Bacterial Metabolite

Introduction

CdS nanoparticles are prepared by different cadmium sources such as cadmium nitrate, cadmium acetate, cadmium chloride, cadmium oleate, and cadmium sulfate. Nanostructures of CdS are given much priority among the other semiconducting materials. Recently, the functionality of Cds nanoparticles has been explored as a drug delivery system or carrier to promote drug delivery to desired sites [1]. A significant challenge confronting researchers in the field of nanoparticle synthesis is the growing need to develop reliable, non-toxic, clean, eco-friendly, and green experimental protocols [2]. Using the Green synthesis methods such as microbes metabolite or plant extracts as the capping agents provide reliable, environmentally friendly, and less toxic alternatives to other approaches [3,4].

Many organisms can be used to produce inorganic materials such as Rhodopseudomonas palustris [5], Bacillus Licheniformis [6], Klebsiella pneumoniae K-6, and Escherichia coli E-30 [7], have been used to manufacture different type of QDs.

Plants are advantageous for the production of nanoparticles as they are easily available, safe to handle and contain a wide range of biomolecules such as alkaloids, terpenoids, phenols, flavonoids, tannins, quinines etc. which mediate the synthesis of nanoparticles [8,9]. In addition, the nanoparticles obtained using plant extracts have different shapes and sizes in contrast with those produced by other methods. In this relation alove vera [3], Annona Muricata Leaf Extract [9], potato starch extract [1] are used for Cds NPs production.

Discussion

Nanoparticles are widely used in a living organism for diagnostic, treatment and drug delivery systems [10]. The particle synthesize in non- les toxic way is very important. Green methods because of simplicity, inexpensive, eco-friendly and nonpolluting attract many kinds of research. Green synthesized mainly were done by bacterial metabolites and plant extracts. Whereas the green synthesized are less toxic but there is a challenge about using bacterial metabolites and plant extracts. Bacterial metabolites may have contamination with the bacterial genome and allergen agents. Although plant extract did not have the genome and allergen agents but the same family in two different locations shown diversity in ingredient ratio. In addition, each part of a plant (root, leaf, and etc.) have various type of chemicals in comparison to other parts of the same plant.

Conclusion

There is a need for future studies for evaluating and characterization bacteria and plant extracts. In addition, we need to know how various ingredients can change nanoparticle shape and how this shape act in living organisms.

Conflict of Interest

The author has declared no conflicts of interest.

Competing Interests

The author has no competing interests to declare.

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