GREEN SYNTHESIS OF COPPER NANO PARTICLES

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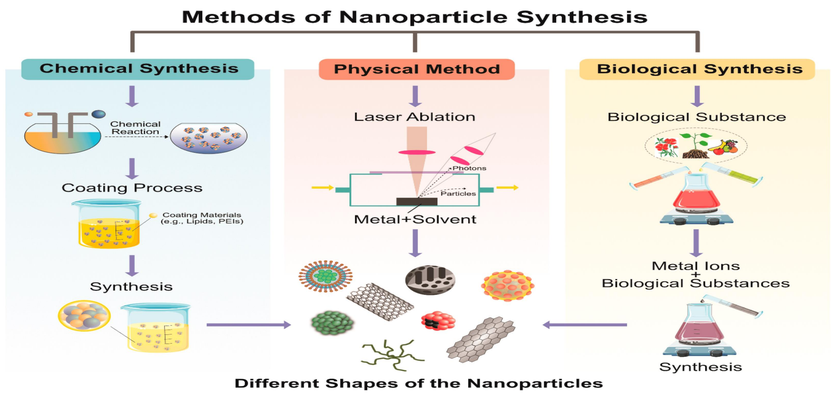
ABSTRACT

In materials science, “green” synthesis has gained extensive attention as a reliable, sustainable, and eco-friendly protocol for synthesizing a wide range of materials/nanomaterials including metal/metal oxides nanomaterials, hybrid materials, and bioinspired materials. As such, green synthesis is regarded as an important tool to reduce the destructive effects associated with the traditional methods of synthesis for nanoparticles commonly utilized in laboratory and industry. Development of eco-friendly Green synthesis of copper nanoparticles (CuNPs) is an important aspect in the field of nanotechnology and is also inexpensive method for nanoparticles biosynthesis.

INTRODUCTION

Green syntheses are required to avoid the production of unwanted or harmful by-products through the build-up of reliable, sustainable, and eco-friendly synthesis procedures. The use of ideal solvent systems and natural resources such as organic systems is essential to achieve this goal. Green synthesis of metallic nanoparticles has been adopted to accommodate various biological materials e.g., bacteria, fungi, algae, and plant extracts. Among the available green methods of synthesis for metal/metal oxide nanoparticles, utilization of plant extracts is a rather simple and easy process to produce nanoparticles at large scale relative to bacteria and/or fungi mediated synthesis. These products are known collectively as biogenic nanoparticles

METHODOLOY



Preparation of CuNPs

In the synthesis of copper nanoparticles, the crude plant extract is mixed with the aqueous solution of CuSo4. The crude Neem leaf extract 2-3 ml is mixed with 50ml 0.1M CuSo4 solution and keep the solution mixture on magnetic stirrer for 20mins. The change in color of the mixture from light blue to dark green within few minutes indicates the formation of metal nanoparticles. The synthesized metal nanoparticles were centrifuge for 10min at 5000rpm

PLANT DISCRIPTION

The plant used in this work is Azadirachta indica (Neem). it is a tree in mahogany family. It is used in controlling blood sugar level and also clean blood . Products from Neem are believed to be anthelmintic, antifungal, antidiabetic, antibacterial, antiviral, Neem Plant Leaves extract is used to produce Iron contraceptive and sedative Various plant part can be used in the synthesis of metal nanoparticles i.e. the leaf, stem, root, flower and seeds. Family Name: Meliaceae Binomial name: Azadirachta indica. Common name: Neem Plant, part taken: Leaves

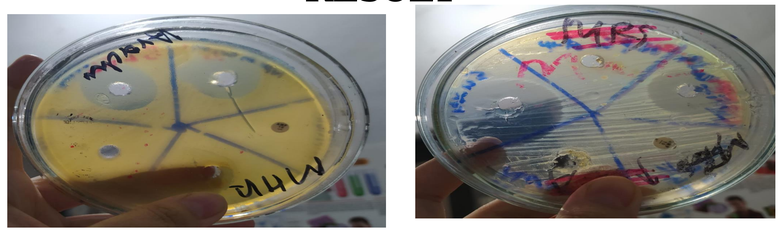
ADVANTAGES AND APPLICATIONS

Copper nanoparticles can be utilized in various biomedical applications, including drug delivery, wound healing, and cancer therapy.

Copper nanoparticles have excellent catalytic activity. They used as catalysts in various chemical reactions,

green techniques eliminate the use of expensive chemicals, consume less energy, and generate environmentally benign products and by products

RESULT



Antibacterial activity has been reported against *Escherichia coli* and a nonresistant strain of Gram-positive bacteria *Staphylococcus aureus, and* bacillus subtillus the results obtained indicate inhibition of growth of the organism due to addition of the nanoparticles

REFRENCES

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