

Green Synthesis of Silver Nanoparticles by Using *Phyllanthus emblica* and *Adhatoda vasica* Leaf Extract and their comparative study on microbes.

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INTRODUCTION & AIM

In ancient time silver played an important role of novel metal ion ,to fight against many infections.

Now silver is used as a AgNPs for targeting many biomedical,physio-chemical reaction to fulfill research goal ,but there are many drawbacks also reported in AgNPs reaction like allergy and environmental risk , so avoiding these all side-effect plant based AgNPs are synthesized.

In our research ,we have used silver nano-particle of Indian gooseberry (*Phyllanthus emblica*) and Malabar nut(*Adhatoda vasica*)Leaf Extract and their comparative study on microbes.

METHOD

Leaves were first collected, then crushed into a powder.

Next, we made a water-based extract solution by heating the mixture to 80 degrees Celsius for three to four hours using a magnetic stirrer.

Leaf extract was combined with 1M silver nitrate solution, which was made by dissolving 1.7 grams of silver nitrate in 100 milliliters of water.

Finally, the mixture of amla and adusa silver nitrate was centrifuged at 12000 rpm for 30 minutes, discarding the supernatant and collecting the dark pellet to form AgNPs of leaf extract.

The leaf extract was collected in the form of a powder and dried for two to three days in a dark place.

Using the disc diffusion and well diffusion methods, we investigated the effects of these AgNPs powders at varying concentrations against bacteria that cause disease, such as *E. coli*, *S. aureus*, *Mucor*, and *Aspergillus* strains.

Additionally, we utilized the commercial antibiotic streptomycin to complete comparative study.

RESULTS & DISCUSSION

AgNPs of *Phyllanthus emblica* and *Adhatoda vasica* leaf extracts comparative study on microbes explored positive results as compared to commercial antibiotic streptomycin to kill microbes ,that clearly shown by zone of inhibition formation in petridish

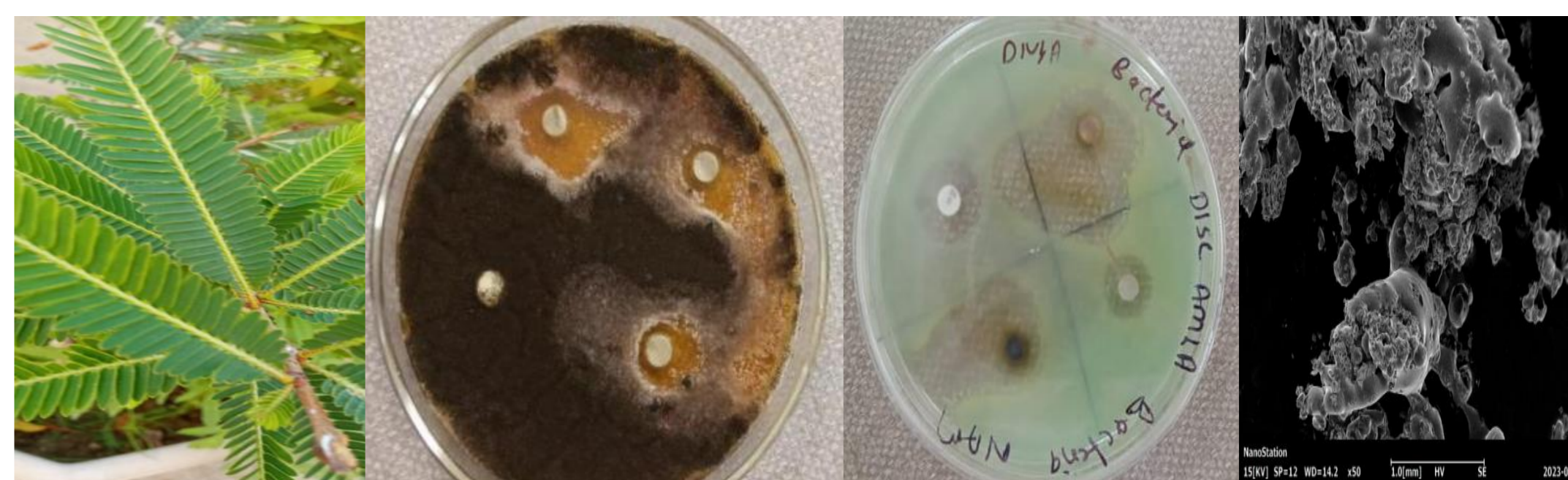


Fig. 1. Formation of Amla AgNPs : (a)Amla leaf (b)AgNPs effect on fungus strain(c) AgNPs effect on bacterial strain (d) SEM analysis

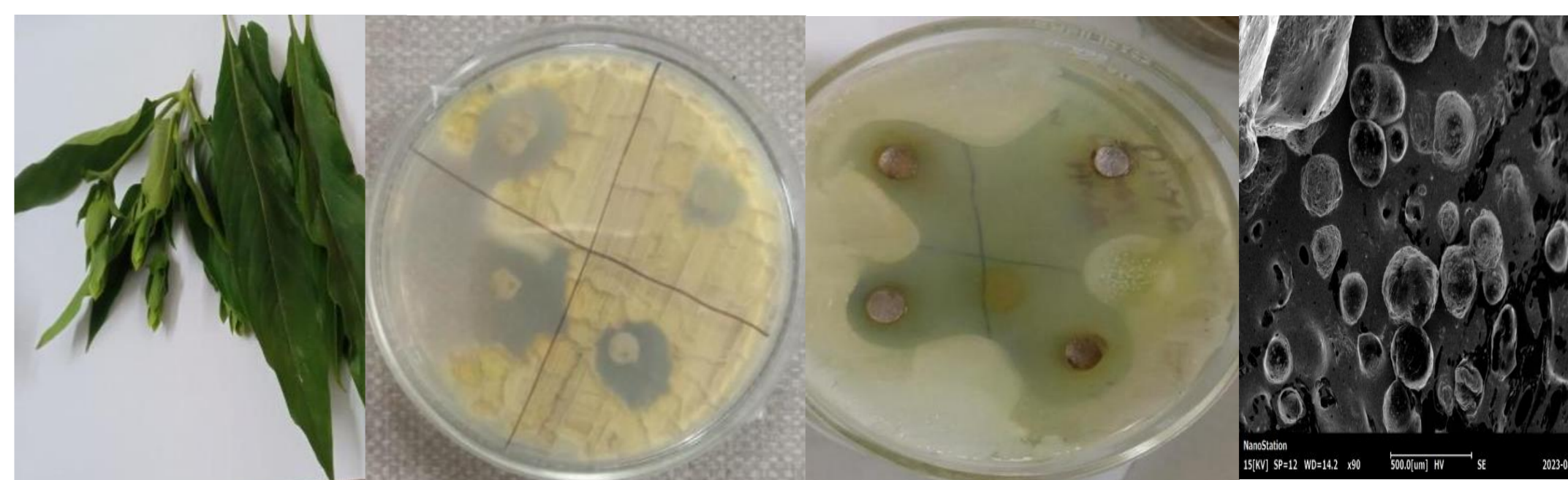


Fig. 1.2 Formation of Adusa AgNPs : (a)Adusa leaf (b)AgNPs effect on fungus strain(c) AgNPs effect on bacterial strain (d) SEM analysis

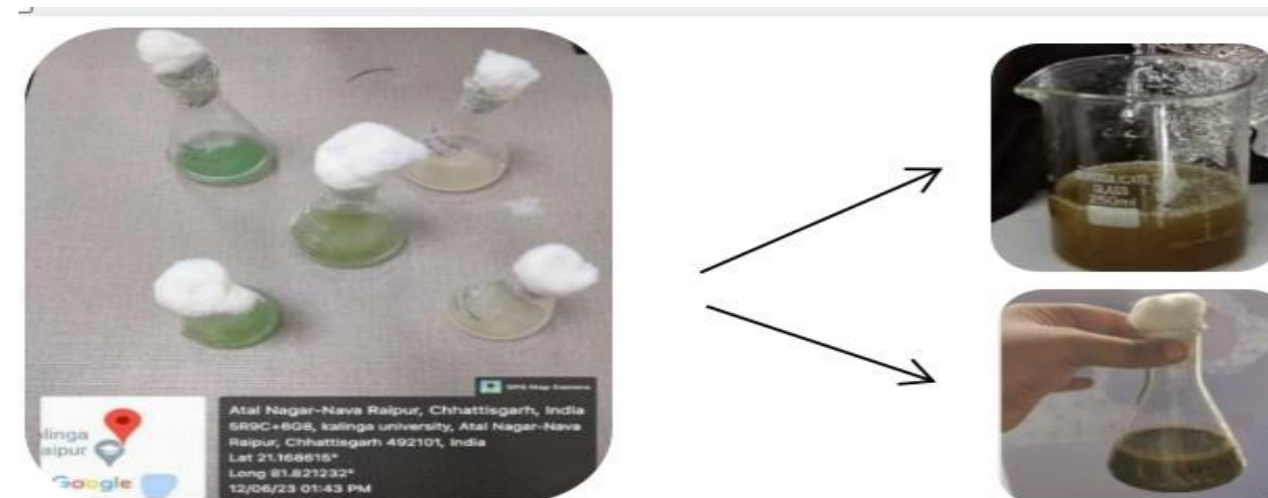


Fig. 1.3 Formation of AgNPS with plant extract of amla and adusa

CONCLUSION

Secondary metabolites in plant leaves makes plant based drug system and AgNPs molecules more effective and eco-friendly as compare to chemical based AgNPS.

FUTURE WORK / REFERENCES

To develop plant based ,ecofriendly drug system ,and silver nanoparticles based fertilizer,