

Review of: "Synthesis of Nickel Nanoparticles Using Ionic Liquid-Based Extract from *Amaranthus viridis* and Their Antibacterial Activity"

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Potential competing interests: No potential competing interests to declare.

I have reviewed the manuscript, and while it presents promising findings, there are several areas that could be improved to enhance the clarity and impact of the research.

Comments:

1. Comparative Data for Plant Extract:

- The manuscript would benefit from including data for the plant extract alone in addition to the UV-visible, FTIR, and XRD spectra for the Ni NPs synthesized. This comparison will help validate the findings by demonstrating the involvement of the plant extract in the synthesis and whether it contributes to the antibacterial activity independently or in combination with the Ni NPs.

2. Antibacterial Activity Measurement:

- There is a need to clarify the methodology used to measure antibacterial activity. Although it is mentioned that precise measurements were taken, providing a more detailed explanation of the methods, such as the type of assay used (e.g., disk diffusion or minimum inhibitory concentration), would improve the understanding of how the antibacterial efficacy was determined.

3. Absorbance Units and Y-Axis Label

- Ensure that the units for absorbance are labeled on the Y-axis of Figure 1. This will help in the proper interpretation of the UV-Visible spectra results.

4. UV-Visible Discussion:

- In the results section, the discussion of the UV-Visible analysis needs to be refined. The focus should be on the UV spectral features of the Ni NPs and how they correlate to their formation and stability. A more detailed explanation of these aspects will provide better insights into the properties of the synthesized nanoparticles.

5. Biomolecule Interaction with Ionic Liquid

- It would be beneficial to discuss whether there is any interaction between the biomolecules in the plant extract and the ionic liquid used in the synthesis. This could be explored through comparative UV spectra that include the Ni NPs, the ionic liquid, and the plant extract to reveal any interactions that play a role in nanoparticle stabilization.

6. FTIR Analysis:

- In the FTIR results, the manuscript mentions "aliphatic amines (C-N) stretching vibrations at 1080 cm⁻¹." It is important to specify which product or component contains the C-N bonds and how this relates to the synthesis process or antibacterial properties.

7. Image Quality:

- The current SEM image is not clear and appears to be of low resolution. For proper morphological analysis, please reupload a higher-resolution image so the nanoparticle structures can be clearly visualized and assessed.

8. Quantitative Results in Conclusion:

- The conclusion would be strengthened by providing more quantitative results from the study. Including specific data, such as particle size, antibacterial efficacy, or other key metrics, would give a more concrete understanding of the research outcomes.

By addressing these points, the manuscript will be clearer and more robust, making the research findings easier to interpret and evaluate.