

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.

Reviewer's Report:

The manuscript entitled "Synthesis of Nickel Nanoparticles Using Ionic Liquid-Based Extract from *Amaranthus viridis* and Their Antibacterial Activity" describes the biosynthesis of nickel nanoparticles using an ionic liquid-based extract of *Amaranthus viridis* and investigates their antibacterial activities. Although the research work is a contribution to the field of eco-friendly nanotechnology, a number of areas need thorough revision and improvement before consideration for publication.

In the introduction section, the use of nickel nanoparticles as antibacterial agents can be added to address the reason for choosing Ni NPs for antibacterial activity studies.

In the Methodology section 2.4, describing the antibacterial activity needs to be revised.

Why is nutrient agar used for the determination of antibacterial activity?

"Various amounts of manufactured nanoparticles were added to each filter paper," after this, it directly says "After that, the plates were incubated for 24 hours at 37°C." What happened to the filter papers used in previous steps?

In the results and discussion section under section 3.1, UV-Vis analysis of Ni NPs, results and discussion about UV-Vis results are missing. Why is antibacterial activity discussed under this section?

Figure 5, "FESEM of synthesized Ni nanoparticles," peaks assigned to Ni are very small (low intensity) while the peaks assigned to Ag, Cl are of high intensity. What's the reason for it?

The discussion lacks a detailed mechanism explaining how Ni NPs exert antibacterial effects. Moreover, what do you mean by 10%, 20%, and 30% zone of inhibition??

The discussion needs to be more explanatory and include a comparison with existing literature on Ni NPs or other nanoparticles synthesized using green methods.

There are a few typographical and grammatical errors. A thorough proofreading is needed.

Bacterial scientific names are not italicized. Moreover, there is no consistency in the naming of the bacterial names, e.g., in section 2.4, *Staphylococcus aureus* is written first, then in the next line, *S.aureus*, and in the next line again, *Staphylococcus aureus*.

Overall, the study shows potential, but it requires revisions. It is acceptable for publication after major revisions that address the methodological concerns, enhance the discussion, and provide more statistical and comparative analyses.

