

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.

[Review Report for 3JQEXB: Qeios]

The manuscript entitled "Synthesis of Nickel Nanoparticles Using Ionic Liquid-Based Extract from *Amaranthus viridis* and Their Antibacterial Activity" reports the green synthesis of nickel nanoparticles using *Amaranthus viridis* plant extract acting as a biofuel. The synthesized nanoparticles were characterized using various analytical techniques. Their antibacterial potential was studied. The paper has an interesting subject but needs to be more carefully written, as by now there are many unconvincing statements and grammatical mistakes. The authors need to address the following major queries before publication in *Qeios*.

1. The graphical abstract attracts the attention of the reader. It is not added to the file. Add a graphical abstract keeping in mind the main aspects.
2. The scientific name of the plant should be italicized as per rule. Follow it in the title, abstract, and in the remaining document as well.
3. The abstract is shallow and descriptive. Add information regarding the size and morphology of Ni nanoparticles and the efficacy order against all the bacterial species in the abstract.
4. In the abstract, either the first letter of all the words of analytical techniques is capitalized, or they are written in small letters. Follow the same pattern, as in all techniques' names the first letter is capitalized except for the FTIR technique. Correct it accordingly.
5. pH is an important controlling factor for nanoparticles synthesis, which is not mentioned in the manuscript. Mention pH while discussing nickel nanoparticles synthesis.
6. In the nickel nitrate structural formula, write numbers in subscript manner as $\text{Ni}(\text{NO}_3)_2$.
7. There is no discussion on the color change in the nanoparticles synthesis method. Discuss it properly. Also, correct the degree symbol throughout the manuscript.
8. Why is 1-ethyl-3-methyl imidazolium chloride preferred over all the solvents for the plant's phytochemical extraction? Give a scientific reason.
9. Bacterial species names should also be italicized as per rule. Correct them in the whole document. Furthermore, the complete scientific name of the species is written once in the document when it is going to be written for the first time, i.e., *Staphylococcus aureus*, but after that, only the first letter of the genus name and the complete name of the

species is written, i.e., *S. aureus*.

10. In the results and discussion under heading no. 3.1, there is discussion about the antibacterial properties of Ni nanoparticles, but the heading is about UV-Vis analysis. Consider the main body of the heading again.
11. In figure no. 1, write down the unit of absorbance.
12. In FTIR analysis, the bands which are discussed should also be highlighted in figure no. 2 with their values. Moreover, “-1” written in the unit cm^{-1} should be in superscript.
13. In figure no. 3, add units of intensity.
14. Which type of method was preferred for antibacterial activity? Either it is the disc diffusion method or something else. Mention it. Cite the following papers for biological studies:
 - <https://pubs.acs.org/doi/10.1021/acsomega.3c05322>
 - <https://doi.org/10.3109/14756360903257884>
 - <https://doi.org/10.3109/14756366.2015.1050011>

1. In the conclusion, instead of using the “IL” abbreviation for ionic liquid, write its complete name.