Review of: "Synthesis and Antibacterial Screening of Cefradine Schiff Bases and Their Metal Salts"

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Potential competing interests: No potential competing interests to declare.

[Review Report for Qeios]

The manuscript entitled “Synthesis and Antibacterial Screening of Cefradine Schiff Bases and Their Metal Salts” is very poorly written, and the ideas do not flow logically. The manuscript, in my view, is rather in a preliminary state, and it is absolutely inadequate for publication in its current form in the journal, *Qeios.* This manuscript continues to be rather poor in scientific and English writing. It lacks the desired level of scientific merit. I would encourage the authors to carry out a series of additional experimental work and submit it at a later, more advanced state. Some of my serious concerns are given below:

1. Revise the abstract; it should summarize the main results of the work and not be like the introduction and conclusion.

2. The introduction part of the manuscript is not appealing and must be revised. Cite the following papers for nitrogen and oxygen-containing Schiff bases:

- https://doi.org/10.1007/s00044-012-0388-0
- https://doi.org/10.1016/j.saa.2017.09.019
- https://doi.org/10.1007/s11696-022-02123-1
- https://doi.org/10.1002/aoc.6054

3. Why did the authors select these metal hydroxide/salts that react with the synthesized Schiff bases?

4. Cite the method adopted for the synthesis of cefradine Schiff bases. The authors should also mention the solvent mixtures used for the TLC. What about the recrystallization of products? Have the authors tried to obtain crystals? Discuss the steps and solvents used for the recrystallization.

5. The paper is all about the synthesis and characterization of IR and NMR. The authors should include other characterization techniques such as elemental analysis, UV-Vis spectroscopy, and mass spectrometry. Also, add spectra for the compounds.

6. Why does the characterization description start with compound 4 and not 3?

7. Write the IUPAC names of compounds 3-35. Also, mention their colors and melting points.

8. What is the scientific reason for the statement “compound 23 exhibits the best activity against both the strains*S.*

aureus and *E.coli*."?

9. The manuscript needs reorganization and should be restructured and complemented with more scientific/experimental information. Not all the results are properly discussed. Include more discussion of the results rather than simply tabulating them. The authors should also include the statistical analysis for the obtained results.

10. Antimicrobial study: The zone of inhibition images for all the compounds should be provided as supporting information. What is the likely mechanism of the antibacterial and antifungal activity?

11. The microbial source (i.e., ATCC, clinical isolate) is not presented. What about the stability of the prepared complexes at the pH employed for biological applications?

12. What is the role of the metal ions in the overall antimicrobial activity? Compare the biological properties of these compounds with those of other compounds. Authors should cite the following references in these sections:

- https://doi.org/10.3109/14756360903257884
- https://doi.org/10.1016/j.molstruc.2022.133044
- https://doi.org/10.3109/14756366.2014.976565
- https://doi.org/10.1134/S107036321708031X

13. Ensure consistent style, font style, and size for all schemes, figures, and tables.

14. The data are not represented in a well-structured and presentable manner. The text of the manuscript must be properly aligned and formatted. There are many space issues as well. The authors need to recheck the manuscript carefully.