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 Comments

Manuscript title: Synthesis and Antibacterial Screening of Cefradine Schiff Bases and Their Metal Salts.

General Comments

The manuscript titled "Synthesis and Antibacterial Screening of Cefradine Schiff Bases and Their Metal Salts" explores the synthesis of various Schiff bases from cefradine and their subsequent transformation into metal salts. These compounds are then tested for antibacterial activity. Key sections include the introduction of Schiff bases in coordination chemistry, the methodology for synthesizing Schiff bases and their metal salts, and the analysis of their antibacterial activities against *Staphylococcus aureus* and *Escherichia coli*. The results show varying degrees of activity, with some compounds displaying significant antibacterial effects. The discussion integrates these findings with existing knowledge in the field.

I have reviewed, and here's a detailed critical analysis and questions for each part of the manuscript;

Specific comments

Abstract:

The abstract concisely summarizes the study, but it could include more information about the methodology-specific results and its conclusion.

Introduction:

Provides good background on Schiff bases and their importance. However, the transition between general information and specific research objectives could be much more detailed.

Experimental:

Detailed and well-structured, but it could benefit from additional explanations regarding the choice of specific compounds and bases/salts for the experiments with methods.

Results and Discussion:

Chemistry part: The synthesis process is well-explained, but the discussion lacks depth regarding the implications of different spectral findings.

Biological Activity: Shows significant findings; however, it would be beneficial to compare these results with existing literature on similar compounds.

Conclusion: The conclusion succinctly summarizes findings but could provide more insight into the potential implications and future directions of this research.

Authors must respond to the following critical Questions:

1. How do the synthesized Schiff bases and their metal salts compare with existing antibacterial agents in terms of efficacy and potential side effects?
2. What are the potential industrial applications of these compounds, and how can they be scaled for production?
3. Could the study elaborate on the mechanism of action of these compounds against the bacterial strains tested?
4. How might the molecular structure of the synthesized compounds be optimized further for enhanced antibacterial activity?
5. Are there any environmental implications or safety concerns associated with the use of these compounds?