Review of: "Investigation and Synthesis of Benzothiazole-Derived Schiff Base Ligand Against Mycobacterium tuberculosis"

Hamid Ullah[1]

1 Chemistry, BUITEMS, Quetta, Pakistan

Potential competing interests: No potential competing interests to declare.

Reviewer **comments:**

The manuscript by Anand et al., titled "AInvestigation and Synthesis of Benzothiazole-Derived Schiff Base Ligand Against Mycobacterium tuberculosis" focuses on a topic of wide interest to the general population worldwide, to academia, and industrial persons, and is a relevant and timely topic for the Qeios Journal. The manuscript discusses the synthesis and in-silico exploration of a Schiff base ligand against Mycobacterium tuberculosis. Although the topic is of immense importance and the article is designed to address the challenges caused by Mycobacterium tuberculosis, there are still necessary shortcomings in the manuscript that need to be reduced. Accordingly, the authors are required to address the following major comments before it could be considered for publication.

1. **General comment:** Novelty (if any) and critical aspects of the research should be clearly added to the manuscript. Quantitative aspects of the study need much improvement.

Specific comments:

1. Title: The title should be modified by adding some essential terms related to the conducted research, such as “In-silico investigation…….”
2. Abstract: The abstract should clearly state the aim, scope, and limitations of the study briefly.
3. Introduction: The introduction seems to be a good effort by the authors and is related to the subject title with enough references. However, several references are old, and more recent literature about the topic is available, which must replace the older literature cited here. Additionally, the last paragraph must be rephrased, and a clear statement of the research gap, aims, and objectives of the manuscript must be mentioned in this paragraph.
4. Quantitative aspects: The quantitative aspects of the study are limited both in terms of chemistry and biological application since only one ligand is synthesized and only in-silico studies have been conducted. The research needs further extensions by presenting related examples supported by conducting at least in vitro biological studies.
5. Scope of the study: The scope is limited (as mentioned in comment 4) and not mentioned
6. Spectral analysis/discussion part: More in-depth analysis and discussion of the spectrum are needed, as there are some peaks that must be interpreted correctly. For example, the peaks at around 3600 and 2300 cm-1 in the FTIR spectrum are related to which functional group of the synthesized ligands. Moreover, justify why only a low-resolution

mass spectrum was performed.

7. Clarity of the figures/pictures: The resolution of the pictures presented in figures 2 and 3 is not satisfactory.
8. The conclusion section needs much improvement, as it lacks limitations and future research directions.
9. References: Replace the older references with the most recent literature, as several references are older than 2020.
10. English language of the manuscript: The manuscript needs thorough proofreading and needs the removal of all possible typos and grammatical errors. Some of the sections need rephrasing.