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

Zeleke Digafie

Potential competing interests: No potential competing interests to declare.

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To editor

I have thoroughly seen a manuscript entitled as" Synthesis and Antibacterial Screening of Cefradine Schiff Bases and Their Metal Salts" which attempted to search for compounds possessing enhanced biological activities based on converting cefradine into its Schiff base and their metal salts.

1. The researchers used methanol solvent with acetic acid catalyst to prepare the Schiff bases and methanolic aqueous basic solutions to prepare the salts of the Schiff bases. Unfortunately, Cefradine is β-lactam bioactive substance. The main bioactive structure feature β-lactam drugs are the β-lactam ring. The β-lactam is highly strained ring and will be opened when it comes in contact with nucleophilic solvents. The researchers used protonic nucleophilic solvents to conduct the reactions. Thus, this reaction conditions completely destroy β-lactam ring. As any β-lactam drugs, once β-lactam rings of the derivatives were opened, they would lose any bioactivity as it was evidenced in *table 4* of this manuscript.

Most probably the procedures followed by researchers would result in the following amide Schiff bases rather than what have been asserted by researchers as Cefradine Schiff Bases:

1. The researchers attempted to use ^{1}H NMR and IR data to approve the structure of the Schiff bases and their salts. However, these spectroscopic techniques are not enough to indicate the structure of the compounds unambiguously. Especially to indicate the presence or absence of the β-lactam ring in the products.
2. Even the ^{1}H NMR data were not clearly correlated to structure of compounds by identifying the carbons or hydrogens in structure with numbers.
3. Even though most synthetic reactions procedures including preparation of Schiff bases introduces some impurities and byproducts, the researchers didn't use any purification procedures.
4. Any of the spectroscopic spectrum results were not included as supplementary data with manuscript. This created difficulties to assure if the synthesis were achieved with acceptable degree of purity.
5. The result of antibacterial activity reported in manuscript was against premises of the researchers themselves and low bioactivity may be mainly due to destruction of β-lactam ring due to the preparation procedures rather than what have been suggested as steric interference.

Thus, in my opinion, **the current manuscript is not appropriate to be published** in Qeios,