

Green synthesis of chiral imines and their Zn(II) complexes

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Statement of the Problem: Nowadays, reactions conducted in the absence of solvents under mild reaction conditions are becoming an important method in laboratories worldwide as an environment-friendly technique for the efficient syntheses of organic molecules. The main advantages of solvent-free organic synthesis are shorter reaction times, minimum waste and generally higher yields, operational simplicity as well as reduction of thermal degradative byproducts along with cleaner work-up.

Methodology: The preparation of two chiral imines derived from 2-pyridylcarboxaldehyde and the optically active primary aromatic amine (S)-(-)-1-(4-methylphenyl) ethylamine and (S)-(-)-1-(4-methoxyphenyl) ethylamine by solvent-free techniques.

Findings: The ligands obtained were allowed to coordinate with Zn(II) also under solvent-free conditions affording complexes 1 and 2, respectively. The products were characterized by using spectroscopic techniques (FT-IR, NMR H and C, EI-MS) and the structure of the Zn(II) complexes was fully confirmed by X-ray diffraction studies. The antimicrobial activity of the complexes (I)–(III) was evaluated against Gram positive (*Staphylococcus aureus*) and Gram negative (*E. coli*, *Pseudomonas aeruginosa*) bacteria, and yeast (*Candida albicans*).

Conclusion & Significance: The complexes were found to possess noteworthy antimicrobial activity.



Figure: Crystal structure of complex 1 and Crystal structure of complex 2

Biography

Daniela Gutiérrez completed her Bachelor's degree at the Universidad Autónoma de Puebla (México) in 2015. She is pursuing Master's degree in Biochemistry and Molecular Biology. Her research interests are the synthesis of metallic complexes by using Green Chemistry methods and their application in the biology field.

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