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Synthesis, spectral and biological evaluation of *in vitro* antimicrobial activity and molecular docking studies of Schiff base ligand 1,2-cyclohexadiene/*o*-vanillin and its transition metal complexes

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Exploring application of cost-effective transition metal-based drugs with high pharmaceutical properties has led to the progression of Schiff-base centred medicinal chemistry. Following this line, herein a series of new class of transition metal complexes Ni(II), Cd(II), Mn(II) and Zn(II) have been synthesized using a Schiff base ligand derived from 2 moles of *o*-vanillin and 1 mole of 1,2-cyclohexanediamine. The elemental analysis, conductivity, ¹H NMR, UV-Vis, IR spectra and TGA studies have been used to characterize the as-synthesized ligand together with associated metal complexes. Additionally, testing the antimicrobial properties against Gram-positive (*S. aureus*) and Gram-negative (*E. coli*) bacteria establishes a higher inhibiting efficiency and high-points the role of the compounds in stronger antibiotic use action. As a result, the current study acknowledges the potential of the new Schiff-base derived complexes as prescription medication.

Keywords: Schiff base ligand, *o*-Vanillin, 1,2-Cyclohexanediamine, Metal complexes, Molecular docking, Microbial activity