

SYNTHESIS, CHARACTERIZATION AND BIOLOGICAL STUDY OF NEW COMPLEXES SCHIFF BASE DERIVED FROM 4-BROMO-2-METHYLANINE

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ABSTRACT : The mixed ligand complexes of Schiff base ligand (Z)-2-(((4-bromo-2-methylphenyl) imino) methyl)-4-methylphenol (L) with some metals ion (II); Mn(1), Co(2), Ni(3), Cu(4), Zn(5) Cd(6) and Hg(7) and 1,10-Phenanthroline (phen) were synthesis and characterized by the mass and ¹HNMR spectrometry (ligand Schiff base), the FTIR, UV-visible and the flame atomic absorption (A.A) spectrum, the C.H.N analysis and the chlorine content, in addition to measuring the magnetic sensitivity of the complexes. All the complexes had octahedral geometry. The bioactivity activity for compounds against; *Rhizopodium*, *Staphylococcus aureus* and *Escherichia coli*, the compounds showed different efficacy towards these microorganisms.

Key words : Ligand Schiff base, microorganisms, Schiff base, thermodynamic functions.

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INTRODUCTION

The ligand Schiff base (LSB) prepared from carboxylic compounds and primary amines was first reported by chemist Hugo Schiff (Nishad *et al*, 2007). Element ions have played an important role in the biological system (Sari *et al*, 2006; Campbell, 1975) for the past years. Metal ions can be introduced into a biological system (Campbell, 1975) for therapeutic or diagnostic purposes, although these purposes may overlap in many cases (Kuz'min *et al*, 2005; JAYASREE *et al*, 1993). Minerals not only provide a way to synthesize, but also introduce functions that enhance drug action (Yogeeswari *et al*, 2004). Synthesis of a series of ligand Schiff base (2-9), which one of these ligands was with the reaction of 4-bromo-2-methylaniline with 3-acetylcoumarin. It was attracted great interest from organic chemists and medicine due to its photosynthetic and photochemical behavior (Olayinka *et al*, 2016). The structural and electronic properties of the metal-Schiff base complexes of NiL₂ 2 (1), PdL₁ 2 (2), ZnL₂ 2 (3), and NiL₁ 2 (4), where L₁ and L₂ are Schiff bases synthesized from salicylaldehyde and 2-hydroxy-5-methylbenzaldehyde, respectively. Natural bond analysis showed that in complexes 1 and 2, the metal ion coordinates to the ligands through electron donation from

lone pairs on ligand nitrogen and oxygen atoms to s and d orbitals on the metal ion. In complex 3, metal-N and metal-O bonds are formed through charge transfer from the lone pairs on nitrogen and oxygen atoms to an s orbital of Zn (Amina *et al*, 2018). In recent years the effect of alternate site on supramolecular topology formation, intramolecular geometry, tautomeric behavior, and elemental form dependence on solvent type were studied using XRD, UV-Vis, NMR, DFT, PES and HOMA methods on three novel methods from Schiff bases ligand from the reaction of 2-hydroxy-4-methoxybenzaldehyde with 4-bromo-2-methylaniline. XRD studies show that different alternative positions cause different types of interactions between non-covalent molecules in the crystalline enclosures of the compounds (Gokhan *et al*, 2020). The synthesized of three Schiff bases, by the condensation of 4-bromo-2-methylaniline, 4-bromo-3-methylaniline and 3-bromo-4-methylaniline with 2-hydroxy-4-methoxybenzaldehyde, the compounds have the substituents in different positions. The compounds have been investigated experimentally (XRD, UV-Vis, ¹H and ¹³C NMR) and computationally (DFT and HOMA) by considering the relevant factors that affect the tautomeric behavior of an o-hydroxy Schiff basis in the solid-state and solvent media (Ka'ata' *et al*, 2020). In this study, mixed