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SYNTHESIS, CHARACTERIZATION AND *IN-VITRO* BIOLOGICAL ACTIVITIES OF NOVEL BIDENTATE SCHIFF BASE LIGAND AND THEIR COBALT (II) COMPLEXES

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Abstract:
The new Heterocyclic Co(II) complexes of the Schiff base ligand derived from 2-hydroxy-1-naphthaldehyde & 2-amino-4-hydroxy-6-methylpyrimidine to form schiff base (L_1) was synthesized and characterized by IR and electronic spectroscopies, melting points, percentage metal analysis, conductance and magnetic susceptibility measurements. The IR spectra indicated that the Schiff base (L) coordinated to the metal ions using N donor atom of imine and O- donor atom of the napthalenol moieties. The percentage metal analysis, room temperature magnetic moment and electronic spectroscopy showed that the complexes assumed an octahedral geometry. The molar conductance measurements in DMSO confirmed the non-ionic nature of the complexes. The *in-vitro* antibacterial & antifungal acclivity indicated that the Schiff base and their heteroleptic metal complexes exhibited very good antifungal and antibacterial activity against *Aspergillus niger, Penicillium chrysogenum, Fusarium moneliforme* and *Aspergllus flavus* and *Escherichia coli, Salmonella typhi, Staphylococcus aureus, B. subtilis.* The result indicated that the complexes exhibited good antifungal and antibacterial activities.

Key words:
Heterocyclic Schiff bases, 2-hydroxy-1-naphthaldehyde & 2-amino-4-hydroxy-6-methylpyrimidine, Biological Activity.

Introduction:
The privileged structure of heterocycles in drug design and synthesis is an essential aspect of bio-inorganic and medicinal chemistry. Compounds containing heterocyclic structures possess high degree of binding affinity to biological systems [1] and have been reported to exhibit pronounced pharmacological, analytical, and industrial applications [2-3]. The heterocyclic aromatic compounds of pyrimidine are important
constituents of nucleic acids (DNA and RNA) and forms stable Schiff base ligands with carbonyls [4-5]. The presence of the two nitrogen atoms in pyrimidinyl compounds contribute immensely to their wide spread therapeutic applications especially against antibiotic resistant infections [6-7].
Heterocyclic pyrimidine derivatives are also reported as anti-allergy drugs and to possess hypnotic activity [8]. In the past two and half decades, interests among researchers aroused toward transition metal complexes of heterocyclic aromatic Schiff bases bearing nitrogen, oxygen and sulphur donor atoms are due to their therapeutic importance [9-10] .
Schiff base metal complexes constitute an essential class of compounds with various pharmaceutical activities including activity against several fungal and bacterial infections [11]. They have also been found to be active against HIV and tumour cells, and as good anti-tubercular, anti-inflammatory, anticoagulant and anticonvulsant [12-14] agents. Extensive literature search showed that no information is available on \ ligand complexes of 3-{[-pyrimidin-2-yl) imino] methyl} napthalen-2-ol. Hence, the present study discusses the synthesis, characterization, antibacterial and antifungal studies of heteroleptic metal (II) complexes of 3-{[-pyrimidin-2-yl) imino]methyl} napthalen-2-ol as a continuation of the research activities of our group on various metal (II) pyrimidinyl Schiff bases as chemotherapeutic agents in cancer and infectious disease research [15-18] .
Pyrimidine bioactive derivatives reportedly form stable Schiff bases which can be used as molecular metal ion chelators [19]. It has also been shown that the efficacy of pyrimidine bioactive molecules is enhanced in its coordination to metal ions [20-22]. Heteroleptic metal complexes of pyrimidinyl