



ChemTech

## International Journal of ChemTech Research

CODEN(USA): IJCRGG, ISSN: 0974-4290,

ISSN(Online):2455-9555

Vol.10 No.7, pp 455-460,2017

# Synthesis and Characterization of Ni (II), Cu (II) metal Complexes of New Tetradentate Ligand derived from Dehydroacetic acid

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**Abstract:** Colored solid asymmetrical complexes of Ni(II), and Cu(II) of Schiff bases are synthesized from o-phenylenediamine, 3-Acetyl-6-methyl-pyran-2,4-dione (DHA) and 4-N, N Diethyl amino Salicylaldehyde. The structures of ligands and complexes are characterized by thermal analysis, X-ray diffraction, <sup>1</sup>H-NMR, mass, IR, UV-visible spectra, elemental analysis, magnetic susceptibility, and conductometry. Thermal behavior (TG-DSC) of the complexes were studied and kinetic parameters were determined by Horowitz Metzger and Coats Red Fern method. The ligand field parameters have been characterized for Ni (II), Cu(II) complexes, which undergo square planar geometry. The x-ray diffraction data proposes monoclinic crystal system for both complexes. The ligand and their metal complexes were subjected for fungicidal activity against Trichoderma and Aspergillus Niger and antibacterial activity against Escherichia coli and Staphylococcus aureus.

**Keywords:** Powder X-ray diffraction, Thermal analysis, Antimicrobial activity, Dehydroacetic acid.

Shyam R Annapure / International Journal of ChemTech Research, 2017, 10(7): 455-460.

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