

Biological Studies of N-O Donor 4-Acylpyrazolone Heterocycle and Its Pd/Pt Complexes of Therapeutic Importance

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Abstract : The synthesis of N-heterocycles with novel properties, having broad spectrum biological activities that may become alternative medicinal drugs, have been attracting a lot of research attention due to the emergence of medicinal drug's limitations such as disease resistance and their toxicity effects among others. Acylpyrazolones have been employed as pharmaceuticals as well as analytical reagent and their application as coordination complexes with transition metal ions have been well established. By way of a condensation reaction with amines acylpyrazolone ketones form a more chelating and superior group of compounds known as azomethines. 4-propyl-3-methyl-1-phenyl-2-pyrazolin-5-one was reacted with phenylhydrazine to get a new phenylhydrazone which was further reacted with aqueous solutions of palladium and platinum salts, in an effort towards the discovery of transition metal based synthetic drugs. The compounds were characterized by means of analytical, spectroscopic, thermogravimetric analysis TGA, as well as x-ray crystallography. 4-propyl-3-methyl-1-phenyl-2-pyrazolin-5-one phenylhydrazone crystallizes in a triclinic crystal system with a P-1 (No. 2) space group based on x-ray crystallography. The bidentate ON ligand formed a square planar geometry on coordinating with metal ions based on FTIR, electronic and NMR spectra as well as magnetic moments. Reported compounds showed antibacterial activities against the nominated bacterial isolates using the disc diffusion technique at 20 mg/ml in triplicates. The metal complexes exhibited a better antibacterial activity with platinum complex having an MIC value of 0.63 mg/ml. Similarly, ligand and complexes also showed antioxidant scavenging properties against 2, 2-diphenyl-1-picrylhydrazyl DPPH radical at 0.5mg/ml relative to ascorbic acid (standard drug).

Keywords : acylpyrazolone, antibacterial studies, metal complexes, phenylhydrazone, spectroscopy

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