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Cu(II) complexes of tridentate Schiff base ligand: Synthesis, characterization and biological evaluations

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Tridentate donor ligands have shown some ability to stabilize metal complexes, with coordination taking place through the nitrogen-oxygen donor atoms. Schiff bases of aldehydes, their derivatives, and transition metal complexes are active as anticancer, antimicrobial and antioxidative agents. Schiff bases are considered very important class of organic ligands possessing wide applications in many biological aspects. Antioxidants derived from metal-Schiff base ligand combinations have received current attention for their capability to safeguard cells from impairment caused by free radicals. This study aims at the synthesis, characterization of Cu(II) complexes bearing NNO-ligand, antiradical and antimicrobial potentials of the compounds. The synthesized compounds were coloured, air stable and characterized spectroscopically using elemental analyses, molar conductance, UV-Vis, FT-IR, and NMR. The spectral data suggest that the ligand act as tridentate chelating compound, coordinating to the copper ions via the two nitrogen atoms of the azomethine group as well as O atom of phenolic group of the 2',4'-dihydroxyacetophenone. Conductance measurements indicated that the complexes are non-electrolytes. Square planar geometry was proposed for the Cu(II) complexes bearing different anions: Cl^-, Br^-, SCN^-, NO_3^-, CH_3CHOO. The *in vitro* antioxidant activity indicated that the compounds are capable of scavenging DPPH, ABTS radicals in a dose-dependent pattern, with an IC_{50} order higher than the free ligand. Antimicrobial screening against strains gave a low to high activities in the order: $SCN^- > Cl^- > Br^- > NO_3^- > CH_3CHOO^- >$ Ligand. The results showed that the compounds could be a good source of chemotherapeutic agent precursors for infectious disease control.

Biography

Ikechukwu P Ejidike has completed his PhD from University of Fort Hare, South Africa. He is presently a Postdoctoral Fellow and Supervising Postgraduate students at Department of Chemistry, Faculty of Computer and Applied Sciences, Vaal University of Technology. He has published more than 11 papers in reputed journals; others under review, and has been serving as a reviewer to some journals. He has taught Chemistry at high schools, pre-varsity and university. He is a Professional Chemist Member and Member of the South African Chemical Institute (SACI) and International Union of Pure and Applied Chemistry (IUPAC).

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