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Research paper

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E. Sneha Jose, Jessica Elizabeth Philip, A.A. Shanty, M.R.P. Kurup, P.V. Mohanan

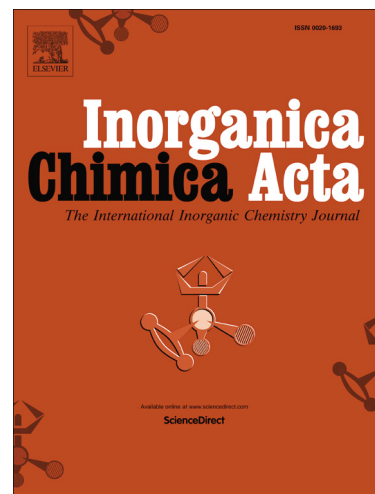
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Novel class of mononuclear 2-methoxy-4-chromanones ligated Cu (II), Zn (II), Ni (II) complexes: synthesis, characterisation and biological studies

E. Sneha Jose, Jessica Elizabeth Philip, A. A. Shanty, M. R. P. Kurup, P. V. Mohanan*

Department of Applied Chemistry, Cochin University of Science and Technology, Kerala,

India - 682022

ABSTRACT:

Two new 2-methoxy -4-chromanones were synthesized from 3-formylchromone and 2-aminopyridine/2-amino-5-nitropyridine in methanolic media and was characterised using various spectral and analytical techniques. Reactions of these ligands with copper (II), zinc (II) and nickel (II) acetates lead to the formation of a novel class of mononuclear co-ordination complexes. Synthesized complexes were structurally characterised using elemental analysis, IR, UV-Vis, EPR, thermo gravimetric analysis, conductivity studies, magnetic measurements and proton NMR. Spectroscopic analysis reveals that ligand behaves bidentately. The complexes were tested for their binding ability with HS-DNA and found to be intercalative. Complex NiL₁ was found to possess the highest K_b value (5.1x10⁵). The α -amylase and α -glucosidase inhibition ability of ligands and complexes were also explored. The tested compounds were found to be mild α -amylase inhibitors and strong α -glucosidase inhibitors, characteristically similar to most of the antidiabetic drugs. Among the synthesized compounds, complex CuL₂ exhibited highest α -amylase inhibitory activity with IC₅₀= 0. 251 \pm 0.2 mM and complex CuL₁ exhibited highest α -glucosidase activity with IC₅₀= 0. 060 \pm 0.3 mM. In addition, compounds were also screened for their antimicrobial efficacy. All complexes were found significantly potent, among which complex CuL₁ the most active with MIC of 15.3 μ g/mL against *S. aureus* (MTCC 96).

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