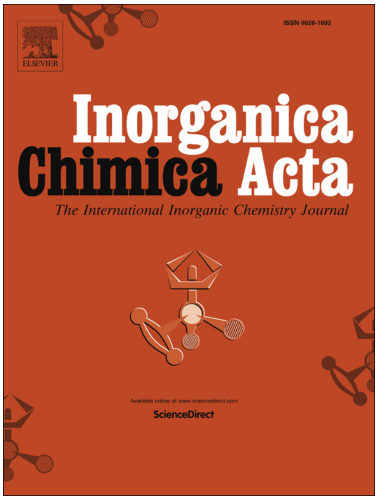

Research paper

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In-situ nickel(II) complexes of 3-(dimethylamino)-1-propylamine based Schiff base ligands: Structural, electrochemical, biomolecular interaction and antimicrobial properties

Arumugam Jayamani[a,b], Soundarajan Nagasubramanian[a], Vijayan Thamilarasan[a,c], Stephen O. Ojwach[b], Gopalakrishnan Gopu[a], Nallathambi Sengottuvelan[a]*

[a]Department of Industrial Chemistry, School of Chemical Sciences, Alagappa University, Karaikudi – 630003, Tamilnadu, India

[b]Department of Chemistry School of Chemistry and Physics, University of KwaZulu-Natal, Private Bag X01, Scottsville, Pietermaritzburg 3209, South Africa

[c]Department of Chemistry and Nano Science, Ewha Womans University, Seoul-120 750, Republic of Korea.

Abstract

Five new di-Schiff base nickel(II) complexes (**1**–**5**) of salen type ligands were synthesized *in-situ* by condensation of 3-(dimethylamino)-1-propylamine with 2-hydroxybenzaldehyde, 2-hydroxy-5-methyl benzaldehyde, 2-hydroxy-5-bromo benzaldehyde, 2-hydroxy-5-nitrobenzaldehyde and 2-hydroxy-1-naphthaldehyde to obtain $\mathbf{L^1}$-$\mathbf{L^5}$, respectively and complexed with nickel chloride. Single crystal X-ray diffraction studies of complexes **1** and **5** showed a distorted octahedral and distorted square-planar geometry, respectively around nickel atoms. The cyclic voltammetry of complexes **1**–**5** showed redox peaks near cathodic and anodic regions assignable to the Ni^{2+}/Ni^{+} and Ni^{2+}/Ni^{3+} redox couples, respectively. The binding studies of complexes with calf thymus DNA (ctDNA) showed an intercalation mode of binding. The nuclease activity of the complexes with pBR322 plasmid DNA showed efficient oxidative cleavage by the formation of singlet oxygen species in presence of H_2O_2. All nickel(II) complexes were found to have greater zone inhibition diameter when