Synthesis, characterization, DNA binding ability, nuclease efficacy and biological evaluation studies of Co(II), Ni(II) and Cu(II) complexes with benzothiazole Schiff base

Sreenu Daravath , Narendrula Vamsikrishna , Nirmala Ganji , Kadtala Venkateswarlu , Shivaraj

PII: S2405-8300(18)30133-2
DOI: https://doi.org/10.1016/j.cdc.2018.08.009
Reference: CDC 137

To appear in: *Chemical Data Collections*

Received date: 26 June 2018
Revised date: 7 August 2018
Accepted date: 10 August 2018

Please cite this article as: Sreenu Daravath , Narendrula Vamsikrishna , Nirmala Ganji , Kadtala Venkateswarlu , Shivaraj , Synthesis, characterization, DNA binding ability, nuclease efficacy and biological evaluation studies of Co(II), Ni(II) and Cu(II) complexes with benzothiazole Schiff base, *Chemical Data Collections* (2018), doi: https://doi.org/10.1016/j.cdc.2018.08.009

Synthesis, characterization, DNA binding ability, nuclease efficacy and biological evaluation studies of Co(II), Ni(II) and Cu(II) complexes with benzothiazole Schiff base

Sreenu Daravath, Narendrula Vamsikrishna, Nirmala Ganji, Kadtala Venkateswarlu, Shivaraj*

Department of Chemistry, Osmania University, Hyderabad, Telangana-500007, India

*Corresponding author email: shivaraj_sunny@yahoo.co.in Mobile: +91 7842572128

Abstract

Metal complexes of the type $[M(L)_2]$ **1-3**, **(**M = Co(II), Ni(II) and Cu(II)) of ligand (**LH** = 2-benzo[*d*]thiazol-6-ylimino)methyl)benzene-1,4-diol, have been synthesized and characterized by elemental analysis, NMR, Infrared, UV–Visible, ESI-Mass, magnetic moments and ESR spectroscopic methods. Based on spectral data a square planar geometry has been proposed for all the complexes. The interaction of metal complexes with CT-DNA was investigated using UV-Vis absorption and fluorescence spectroscopy. The absorption and fluorescence spectral studies indicate a non-covalent interaction between the metal complexes and DNA base pairs. The competitive studies revealed that the complexes could interact the DNA through an intercalative mode and induce oxidative and photolytic DNA cleavage mediated by reactive oxygen species (ROS), and it is found that the Cu(II) complex cleaved DNA more effectively compared to Co(II) and Ni(II) complexes. In addition, antimicrobial activity of all the complexes was also examined.

Keywords: Schiff base; Metal complex; DNA interaction; Biological activity.

Specifications Table

Subject area	Bioorganic chemistry
Compounds	2-benzo[*d*]thiazol-6-ylimino)methyl)benzene-1,4-diol (LH)
Data category	Synthesis, Spectral data, biological studies
Data acquisition format	^{1}H-NMR, ^{13}C-NMR IR, UV–Visible, Mass spectra, Magnetic moment, Elemental analysis.
Data type	Analyzed.
Procedure	Transition metal complexes were synthesized and characterized by elemental and spectroscopic analysis. Compounds were subjected to