

Accepted Manuscript

Crystal structure, DNA binding, cleavage, antioxidant and antibacterial studies of Cu(II), Ni(II) and Co(III) complexes with 2-((furan-2-yl)methylimino)methyl)-6-ethoxyphenol Schiff base

Kadtala Venkateswarlu, Marri Pradeep Kumar, Aveli Rambabu, Narendrula Vamsikrishna, Sreenu Daravath, Krishnan Rangan, Shivaraj

PII: S0022-2860(18)30143-1

DOI: [10.1016/j.molstruc.2018.02.004](https://doi.org/10.1016/j.molstruc.2018.02.004)

Reference: MOLSTR 24826

To appear in: *Journal of Molecular Structure*

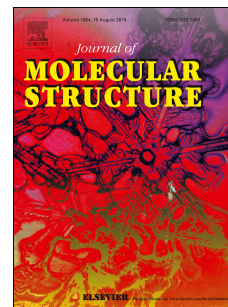
Received Date: 1 November 2017

Revised Date: 30 January 2018

Accepted Date: 1 February 2018

Please cite this article as: K. Venkateswarlu, M.P. Kumar, A. Rambabu, N. Vamsikrishna, S. Daravath, K. Rangan, Shivaraj, Crystal structure, DNA binding, cleavage, antioxidant and antibacterial studies of Cu(II), Ni(II) and Co(III) complexes with 2-((furan-2-yl)methylimino)methyl)-6-ethoxyphenol Schiff base, *Journal of Molecular Structure* (2018), doi: 10.1016/j.molstruc.2018.02.004.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Crystal structure, DNA binding, cleavage, antioxidant and antibacterial studies of Cu(II), Ni(II) and Co(III) complexes with 2-((furan-2-yl)methylimino)methyl)-6-ethoxyphenol Schiff base

Kadtala Venkateswarlu^a, Marri Pradeep Kumar^a, Aveli Rambabu^a, Narendrula Vamsikrishna^a, Sreenu Daravath^a, Krishnan Rangan^b, Shivaraj^{a*}

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

^b Department of Chemistry, BITS-Pilani Hyderabad Campus, Telangana-500078, India

Email: shivaraj_sunny@yahoo.co.in

Mobile: +91 7842572128

Abstract

Three novel binary metal complexes; **1** [Cu(L)₂], **2** [Ni(L)₂] and **3** [Co(L)₃] where, **L** (2-(((furan-2-yl) methylimino)methyl)-6-ethoxyphenol, C₁₄H₁₅NO₃), were synthesized and characterized by various spectral techniques. Based on spectral studies square planar geometry is assigned for Cu(II) and Ni(II) complexes, whereas Co(III) owned octahedral geometry. Ligand, [Cu(L)₂] and [Ni(L)₂] are crystallized and found to be monoclinic crystal systems. CT-DNA absorption binding studies revealed that the complexes show good binding propensity ($K_b = 5.02 \times 10^3 \text{ M}^{-1}$, $2.77 \times 10^3 \text{ M}^{-1}$, $1.63 \times 10^4 \text{ M}^{-1}$ for **1**, **2** and **3** respectively). The role of these complexes in the oxidative and photolytic cleavage of supercoiled pBR322 DNA was studied and found that the complexes cleave the PBR322 DNA effectively. The catalytic ability of **1**, **2** and **3** follows the order: **3** > **1** > **2**. Antioxidant studies of the new complexes revealed that they exhibit significant antioxidant activity against DPPH radical. The Schiff base and its metal complexes have been screened for antibacterial studies by Minimum Inhibitory Concentration method. It is observed that all metal complexes showed more activity than free ligand.

Keywords: Metal complex; Crystal structure; DNA interaction; Antioxidant activity; Antibacterial activity.

1. Introduction

It is well known that deoxyribonucleic acid (DNA) is an important genetic substance in organisms. Errors in gene expression can often cause disease and play a secondary role in the outcome and severity of human disease [1]. DNA is the primary molecular target for many of the drugs that are used in cancer. The transition metal complexes of Schiff bases have tendency to interact with DNA because of their cationic character and three dimensional structural profiles

Download English Version:

<https://daneshyari.com/en/article/7807843>

Download Persian Version:

<https://daneshyari.com/article/7807843>

[Daneshyari.com](https://daneshyari.com)