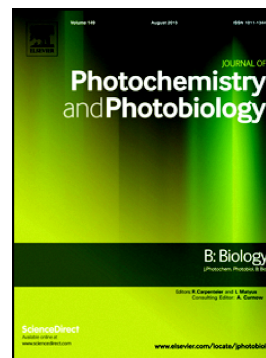


Accepted Manuscript

Bis(μ -chloro) bridged 1D CuI and CuII coordination polymer complex and mononuclear CuII complex: Synthesis, crystal structure and biological properties

Thangavel Thirunavukkarasu, Hazel A. Sparkes, Chandrasekar Balachandran, S. Awale, Karuppannan Natarajan



PII: S1011-1344(18)30007-1

DOI: <https://doi.org/10.1016/j.jphotobiol.2018.02.013>

Reference: JPB 11147

To appear in: *Journal of Photochemistry & Photobiology, B: Biology*

Received date: 4 January 2018

Accepted date: 11 February 2018

Please cite this article as: Thangavel Thirunavukkarasu, Hazel A. Sparkes, Chandrasekar Balachandran, S. Awale, Karuppannan Natarajan , Bis(μ -chloro) bridged 1D CuI and CuII coordination polymer complex and mononuclear CuII complex: Synthesis, crystal structure and biological properties. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Jpb(2017), <https://doi.org/10.1016/j.jphotobiol.2018.02.013>

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.

Bis(μ -chloro) bridged 1D Cu^I and Cu^{II} coordination polymer complex and mononuclear Cu^{II} complex: Synthesis, crystal structure and biological properties

Thangavel Thirunavukkarasu^a, Hazel A. Sparkes^b, Chandrasekar Balachandran^c, S. Awale^c, Karuppannan Natarajan^{*a}

^aDepartment of Chemistry, Bharathiar University, Coimbatore 641046, India.

^bDepartment of Chemistry, University of Bristol, Cantock's Close, Bristol, BS8 1TS, UK.

^cDivision of Natural Drug Discovery, Institute of Natural Medicine, University of Toyama, 2630 Sugitani, Toyama 930-0194, Japan.

Corresponding author e-mail: knatraj66@gmail.com

Abstract

A novel one-dimensional coordination polymer containing -Cu(I)-Cu(II)- core with chloro bridge on Cu(I) and ligand bridge on Cu(II) ions (**1**) and a mononuclear Cu(II) complex (**2**) have been synthesized from the reactions of 3- and 4-methoxy-3-quinolin-3-ylimino-methyl-2-phenol with [CuCl₂(PPh₃)₂]. The ligands and the complexes have been characterized by spectral and analytical methods. In addition, the structures of both the ligands and the copper complexes were confirmed by single crystal X-ray diffraction studies. In both complexes, the phenolic oxygen and azomethine nitrogen atom of the ligand coordinate to the copper ions in a monobasic bidentate manner resulting in an approximately square planar geometry around the copper ion. In the polymeric complex, the N atom of the quinoline ring is coordinated to Cu(I) in addition to the phenolic oxygen and azomethine nitrogen atom coordinating to Cu(II) ion, thus bridging Cu(I) and Cu(II) ions in the complex. The interactions of the compounds with calf thymus DNA (CT-DNA) have been followed by absorption and emission titration methods, which revealed that the compounds interact with CT-DNA through intercalation. Further, the interactions of the compounds with bovine serum albumin (BSA) were also investigated using UV-visible, fluorescence spectroscopic methods. The results indicated that complex **1** exhibited a stronger binding to CT-DNA and BSA than the free ligands and complex **2**. In addition, the *in vitro* cytotoxicity experiment showed that complexes **1** and **2** exhibit potent cytotoxic properties against PANC-1 and Hela cells. Moreover, while complex **1** showed prominent cytotoxic activity against both PANC-1 and Hela cells with IC₅₀ of 17.91 and 11.67 μ M, complex **2** showed

Download English Version:

<https://daneshyari.com/en/article/6493325>

Download Persian Version:

<https://daneshyari.com/article/6493325>

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