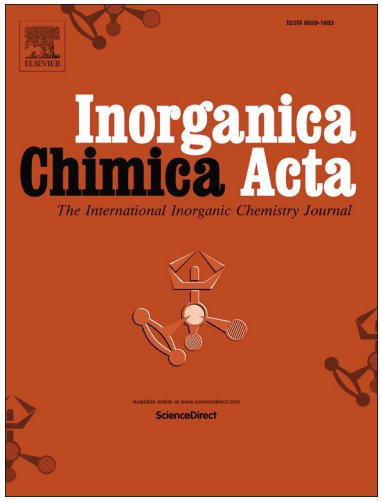

Research paper

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PII: S0020-1693(17)31638-9
DOI: https://doi.org/10.1016/j.ica.2018.06.008
Reference: ICA 18300

To appear in: *Inorganica Chimica Acta*

Received Date: 26 October 2017
Revised Date: 11 May 2018
Accepted Date: 6 June 2018

Please cite this article as: Y. Zhao, Z. Li, H. Li, S. Wang, M. Niu, Synthesis, crystal structure, DNA binding and in vitro cytotoxicity studies of Zn(II) complexes derived from amino-alcohol Schiff-bases, *Inorganica Chimica Acta* (2018), doi: https://doi.org/10.1016/j.ica.2018.06.008

Synthesis, crystal structure, DNA binding and in vitro cytotoxicity studies of Zn(II) complexes derived from amino-alcohol Schiff-bases

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ABSTRACT

Three new zinc(II) complexes, namely, $[Zn_2(H_2L1)_2(OAc)_2]$ (**1**), $[Zn_3(H_2L1)_2(OAc)_4]$ (**2**) and $\{[Zn_3(H_2L2)_2(OAc)_4]\cdot C_2H_5OH\cdot DMF\}$ (**3**) [(H_3L1 = Schiff-base derived from salicylaldehyde and 2-amino-2-ethyl-1,3-propanediol and H_3L2 = Schiff-base derived from 5-chlorosalicylaldehyde and 2-amino-2-ethyl-1,3-propanediol)], were synthesized and characterized using elemental analyses, infrared spectroscopy and X-ray diffraction. Single crystal structure analysis reveals that complex **1** is five-coordinated distorted square pyramidal configuration. Complexes **2** and **3** exhibit the similar trinuclear structure. And the alkoxy groups in the ligands are play an important role in the formation of supramolecular networks of complexes **1**–**3**. The interaction of the complexes **1**–**3** with calf thymus (CT) DNA was investigated using UV–visible (UV–Vis), circular dichroism spectra (CD), fluorescence, viscosity and thermal denaturation methods. The intrinsic binding constants for the complexes are found to order of 10^4 indicating that the complexes are good metallo-intercalators. Complex **1** shows maximum binding affinity (K_b: 7.64×10^4) compared to others. The all complexes can bind to CT-DNA via intercalative mode. The MTT assay show that the cytotoxicity of dinuclear complex **1** is more effective with HeLa cancerous cells. All the experimental results are suggestive that the nuclearity and configuration of zinc complexes have significant influence on their properties.

Keywords: Schiff-bases; Amino-alcohol; Zinc complexes; Cytotoxicity; DNA-binding

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