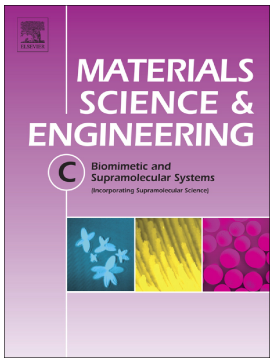

Studies on the interaction of mononuclear metal(II) complexes of amino'aphthoquinone with bio-macromolecules

A. Kosiha, Kong Mun Lo, C. Parthiban, Kuppanagounder P. Elango

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Studies on the interaction of mononuclear metal(II) complexes of amino-naphthoquinone with bio-macromolecules

A. Kosiha[a], Kong Mun Lo[b], C.Parthiban[a] and Kuppanagounder P. Elango[a]*

[a]*Department of Chemistry, Gandhigram Rural Institute (Deemed University), Gandhigram 624 302, India;* [b]*Department of Chemistry, Faculty of Science, University of Malaya, 50603 Kuala Lumpur, Malaysia*

Abstract

Three metal(II) complexes [Co**L**Cl_2], [Cu**L**Cl_2] and [Zn$\mathbf{L}_2Cl_2$] {L = 2-chloro-3-((3-dimethylamino)propyl)amino)naphthalene-1,4-dione} have been synthesized and characterized using analytical, thermal and spectral techniques (FT-IR, UV-Vis, ESR and ESI-MS). The structure of the **L** has been confirmed by single crystal XRD study. The complexes show good binding propensity to bovine serum albumin (BSA) having relatively higher binding constant values (10^4 M^{-1}) than the ligand. Fluorescence spectral studies indicate that [Co**L**Cl_2] binds relatively stronger with CT DNA through intercalative mode, exhibiting higher binding constant ($2.22x10^5$ M^{-1}). Agarose gel electrophoresis run on plasmid DNA (pUC18) prove that all the complexes showed efficient DNA cleavage via hydroxyl radical mechanism. The complexes were identified as potent anticancer agents against two human cancer cell lines (MCF7 and A549) by comparing with cisplatin. Co(II) complex demonstrated greater cytotoxicity against MCF7 and A549 cells with IC_{50} values at 19 and 22 μM, respectively.

**Corresponding author*, Tel.: +91 451 2452371; Fax: +91 451 2454466
E-mail address: drkpelango@rediffmail.com

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