





## Cytotoxic profile study, DNA and protein binding activity of a new dinuclear nickel(II) thiocyanato complex

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### ABSTRACT

One new binuclear Ni(II) complex with the molecular formula  $[\text{Ni}_2(\text{L})_2(\text{SCN})_2(\mu\text{-SCN})_2]$  (**1**) has been synthesized using a tridentate Schiff base ligand (L), formed by the condensation between quinoline-2-carboxaldehyde and *N,N*-dimethylethylenediamine. Complex **1** was characterized by FT-IR, UV-vis, and ESI-mass spectroscopy techniques, as well as elemental analysis, cyclic voltammetry, and single-crystal X-ray crystallography. The X-ray diffraction analysis of **1** indicated a centrosymmetric complex with nickel(II) centers in a distorted octahedral geometry and double bridged by thiocyanate anions *via* end-to-end ( $\mu$ -1,3) fashion. The interaction of **1** with CT-DNA was explored by UV-vis and fluorescence spectroscopy, viscosity and cyclic voltammetry which indicated a moderate intercalation of the complex with CT-DNA. The protein binding study of **1** with BSA and HSA was investigated by various spectroscopic methods and indicated a static quenching process. In addition, **1** showed prominent *in vitro* cytotoxic activity against human melanoma (A375) and human breast carcinoma (MDA-MB-231) cell lines under the identical condition with  $\text{IC}_{50}$  value of 149.06 and 124.22  $\mu\text{M}$ , respectively.


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