Design and Synthesis of chiral R/S-metallo drug: Enantiomeric discrimination with CT–DNA, selective cleavage of G- Quadruplex telomeric DNA and kinetic studies of cleavage of puC19 DNA.

Abstract

Enantiomeric Cu(II) complexes $\mathbf{1_S}$ and $\mathbf{1_R}$ were synthesized from R/S–2–amino–2–phenylethanol and 1, 2 hydroxynaphthaldeyade. The complexes were thoroughly characterized by elemental analysis, mass spectrometry, IR, EPR spectroscopy and X-ray crystallography. *In vitro* DNA and RNA binding studies were carried out by UV-vis, thermal denaturation and circular dichroic techniques. The extent of binding was quantified by computing their intrinsic binding constant K_b and binding constant K values which showed that both the S-enantiomers of ligand and complex exhibited higher binding propensity as compared to their R-enantiomeric analogs and followed the trend $\mathbf{1_S} > \mathbf{2_R} > \mathbf{L_S} > \mathbf{L_R}$. Thermal denaturation studies of complexes in the absence and presence of CT–DNA has been carried out and the calculated ΔT_m was found to be 1-3 ºC depicted electrostatic mode of binding which corroborated well with the results of UV-vis , and other optical methods.

The cleavage efficiency, kinetic studies, selective G- Quadruplex Telomeric DNA cleavage, RNA cleavage studies and anticancer studies to be carried out at OSU.