



## Comparative Studies on DNA Interactions and Biological Activities of Lanthanum (III) Complexes with 2-quinoline terpyridine and 3-quinoline terpyridine

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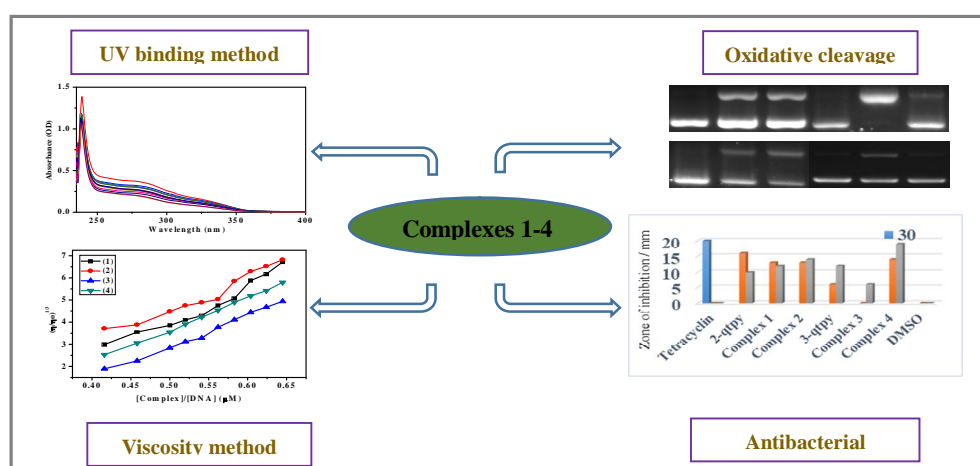
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### ABSTRACT

Lanthanum (III) complexes **1–4** were synthesized and studied extensively towards their DNA binding and cleavage properties. Mode of binding of complexes depends on the nature of the ligands and they possess different biological significances. In this regards we have synthesized La(III) complexes with 4'-[(2-quinoline)-2,2';6',2''-terpyridine (2-qtpy), 4'-[(3-quinoline)-2,2';6',2''-terpyridine (3-qtpy) and 1,10-phenanthroline (phen). [La(2-qtpy)<sub>2</sub>(NO<sub>3</sub>)<sub>2</sub>](NO<sub>3</sub>) (**1**), [La(2-qtpy)(phen)<sub>2</sub>(NO<sub>3</sub>)<sub>2</sub>](NO<sub>3</sub>) (**2**), [La(3-qtpy)<sub>2</sub>(NO<sub>3</sub>)<sub>2</sub>](NO<sub>3</sub>) (**3**) and [La(3-qtpy)(phen)(NO<sub>3</sub>)<sub>2</sub>](NO<sub>3</sub>) (**4**). The newly synthesized complexes were characterized by FT-IR, UV-Vis, <sup>1</sup>H-NMR spectroscopic and ESI-mass spectrometric technique and by elemental analysis. The mode of binding of complexes **1–4** towards HS-DNA were examined by UV-Vis absorption spectral studies and viscosity measurements. The chemical nuclease activity of these complexes towards SC pUC 19 DNA was evaluated by agarose gel electrophoresis. The antibacterial activities of the complexes **1–4** were tested against Gram positive and Gram negative bacteria. The cytotoxic activities of 2-qtpy and complex **2** were carried out by MTT assay against HeLa cell lines. The antioxidant activity of 3-qtpy and its complexes were carried out by free radical scavenging and ferrous ion chelating method.

### Graphical Abstract



**Keywords:** Antibacterial activity, Cytotoxic study, DNA binding and cleavage studies, Lanthanum (III) terpyridine complexes.

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