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Antiproliferative and Anticancer Activity of Copper Complexes that Works without Chemical or hν as Stimulant

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Metallo-organic compounds are ever interesting to study their antitumor activity. This talk deals with the syntheses, characterization and structure determination of a Cu (II)-complex of anthtracenyl terpyridine and its plasmid cleavage, and cytotoxicity towards different cancer cell lines. The plasmid cleavage studies were carried out in presence of 1 in dark, under UV light and under visible light. While all the three forms of the plasmid DNA are seen when carried out under visible light, only closed and nicked circular forms were seen under UV light. In dark the plasmid cleavage was spontaneous. 1 showed remarkable antiproliferative activity for cancer cell lines, viz., cervical (HeLa, SiHa, CaSki), breast (MCF–7), liver (HepG2), and lung (H1299). The IC_{50} values are in the range of 0.8 to 6.3 μM, which is far superior as compared to the platin-drugs. Incubation of cells with 1 results in granular structures only with the HPV infected ones and not with others as studied by phase contrast and fluorescence microscopy (Figure). The role of HPV has been further confirmed by transfecting the MCF-7 cells with E6. To our knowledge this is the first copper complex that causes the cell death by interacting with HPV viral protein. We have also shown antiproliferative activity of Cu(II)-complexes of glycoconjugates. Therefore, our current focus is to modify the anthracenyl terpyridine ligand with some glycosylation and/or by attaching some cellular receptors, so that cell targeting can be achieved. Results of all these will be discussed.