

# Interaction of mixed [(2,2'-pyridyl)quinoxaline][dithiolene]Pt(II) with oligonucleotides and DNA

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A great deal of attention is being paid to DNA interactions with mixed ligand complexes. Some complexes with  $\alpha$ -diimine and 1,2-dithiolate ligands serve as novel types of intra- and interstand cross-links, suggesting that different DNA-binding modes indeed may have different biological effects<sup>1</sup>.

In this work, both the conformational changes and thermal stability of DNA double helix caused by the interaction with the title compound, are presented. The DNA's photocleavage by the platinum complex has also been studied. The interactions of the aforementioned compound with DNA were investigated through circular dichroism spectroscopy (CD), DNA thermal denaturation analysis, whereas their interaction with oligodeoxynucleotides was studied by 1D and 2D nuclear magnetic resonance, UV-visible and circular dichroism spectroscopy. The role of the title complex has been investigated not only because it possesses two unsaturated chelating ligands, a  $\pi^*$ -donor (dithiolate) and a  $\pi^*$ -acceptor (quinoxaline), but also because its significant redox chemistry and photochemistry could be responsible for many considerable intra- and inter-electron transfer in organic and biochemical processes. Moreover (2,2'-pyridyl)quinoxaline as a diimine-ligand could be considered of high importance since it belongs to natural products and can be used as antibiotic.<sup>2</sup>

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- (1) (a) Komea, S.; Kalaya, G.V.; Lutz, M.; Spek, A.L.; Yamanak, Y.; Sato, T.; Chikuma, M.; Reedijk, J., *J. Med. Chem.*, **2003**, 46, 1210. (b) Falaras, P.; Mitsopoulou, C.A. et al., *Inorg. Chem.*, **1995**, 34, 4536.
- (2) (a) N. E. Mollegaard, C. Bailly, M. J. Waring, P. E. Nielsen, *Biochem.* **2000**, 39, 9502; (b) H.-R. Park, T. H. Kim, K.-M. Bark, *Eur. J. Med. Chem.* **2002**, 1.