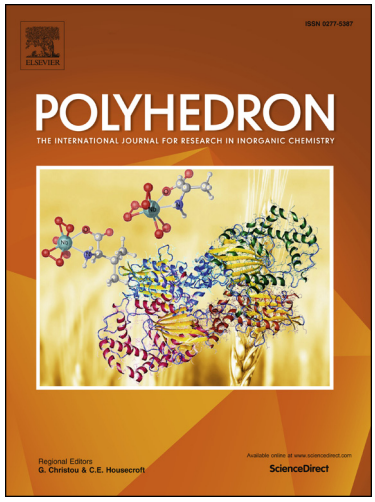

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Synthesis, characterization and anticancer evaluation of transplatin derivatives with heterocyclic thiones

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Abstract

Platinum(II) complexes of heterocyclic thiones (L) based on transplatin having the general formula, *trans*-$[Pt(NH_3)_2(Thione)_2](NO_3)_2$ have been synthesized and characterized using elemental analysis, IR, and NMR (^1H & ^{13}C) spectroscopy. The crystal structures of two of them, *trans*-$[Pt(NH_3)_2(Imt)_2](NO_3)_2$ (**1**) and *trans*-$[Pt(NH_3)_2(Me_2Imt)_2](NO_3)_2$ (**3**) were determined by X-ray crystallography. The structures of **1** and **3** consist of *trans*-$[Pt(NH_3)_2L_2]^{2+}$ complex ions and nitrate counter ions. The platinum atom in both the complex ions adopts a distorted square planar geometry. The spectroscopic data indicated the coordination of thione ligands to platinum(II). The *in vitro* cytotoxicity of these compounds as well as of cisplatin and carboplatin was investigated using MTT assay against three human cancer cell lines, which are; A549 (lung carcinoma), MCF-7 (breast carcinoma) and HTC15 (colon cancer). The *in vitro* cytotoxicity in several cases is comparable or even higher than carboplatin and in two cases than cisplatin.