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A new platinum-based prodrug candidate: its anticancer effects in B50 neuroblastoma rat cells.

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ABSTRACT

Aims: Neuroblastoma is a rare cancer that affects children, mostly under the age of 5. This type of cancer starts in very early forms of immature nerve cells or developing cells found in embryo or fetus. To date cisplatin represents one of the most potent antitumor agent known, however, the onset of systemic side effects and the induction of drug resistance limit its use in the clinic for long-term treatment. In the present study we have analysed the effects of a new compound of platinum(IV) conjugates, named Pt(IV)Ac-POA, which is able to generate a synergistic antineoplastic action when released along with cisplatin upon intracellular Pt(IV) → Pt(II) reduction.

Main methods: To assess the growth inhibition of the compounds under investigation, a cell viability test, *i.e.* the resazurin reduction assay was used on the B50 neuroblastoma rat cells. Further analysis on the cell cycle and metabolic alterations were carried out through flow cytometry. Morphological changes and activation of different cell death pathways after treatment, were observed at transmission electron microscope and by immunocytochemistry at fluorescence microscopy. Protein expression was examined by western blot analysis.

Key findings: This compound bearing bioactive axial ligand, such as the active histone deacetylase inhibitor (HDACi) (2-propynyl)octanoic acid (POA), induced cell death through different pathways at a concentration ten times lower than cisplatin.

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