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Platinum-based antitumor drugs in the treatment of cancer

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Abstract

The accidental discovery (1960's) and eventual FDA-approval of Cisplatin (1978), as an antitumor drug, is indeed a fascinating and inspiring success story. This ground-breaking discovery occurred in the laboratory of Professor Barnett Rosenberg in the Biophysics Department at Michigan State University. Extensive research on analogs of cisplatin, led to the development/approval of Carboplatin (1989) and Oxaliplatin (2004). Collectively, these three drugs are used in the treatment of 11 different tumors and it is estimated that two out of every three chemotherapeutic treatments of cancer involves a platinum-based drug.

This talk will review the status of the use of Platinum-based drugs as antitumor agents and primarily focus on the new types of Platinum-based complexes that loom as potential fourth-generation agents.

Biography

James Hoeschele received his Ph.D. from Michigan State University and then took a position at Oak Ridge National Laboratory in the Transuranium Element Program. In 1970, he joined Professor Barnett Rosenberg's research group at Michigan State University as his first Post-Doctoral Fellow (1970-1972). He then held successive positions at Engelhard Industries (1972-1976), Oak Ridge National Laboratory (1976- 1983), Parke-Davis Pharmaceutical Company (1983-1992), University of Michigan (1992-1994), Michigan State University (1994-2009) and is currently an Adjunct Professor of Chemistry at Eastern Michigan University since 2010. In all of these positions, his research focused principally on the development of Pt anti-cancer drugs and, in general, on the use of precious metal complexes as medicinal agents. He played a key role in the development of Cisplatin and is a co-inventor of Carboplatin and the Triplatinum drug, BBR3464. He continues to do research relating to the use of precious metal complexes as medicinal agents.

Publications

1. Tri(platinum) Complexes
2. Aminoalkyl-Substituted Cycloalkylamine Platinum(II)
3. Preparation of Platinum(II) and Platinum(IV) Alkanediamine Complexes as Neoplasm Inhibitors
4. Novel Neutral Mixed-Ligand Platinum(II) and Platinum(IV) Complexes
5. Aminoalkyl-Substituted Azetidineplatinum(II) Complexes
6. Cis-Diammineplatinum(II) Orthophosphate Complexes
7. Ethylenediamineplatinum(II)-2,4-dioxopyrimidine Complexes
8. Ethylenediamineplatinum(II) and 1,2-Diaminocyclohexaneplatinum(II) Pyrophosphate Complexes

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