

Nitroplatinum (IV) Complexes for Targeted Anti-cancer Therapy

Researchers at the University of South Florida have developed a new system for targeted delivery of nitroplatinum (IV) complexes for tumor-specific anti-cancer therapy.

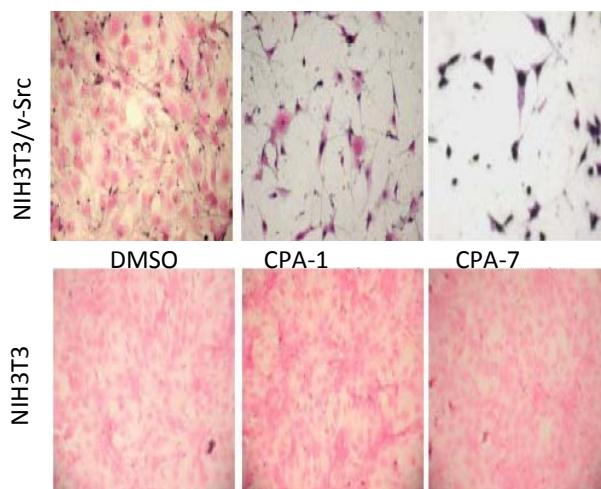
Currently, platinum (II) compounds are used in many anti-cancer therapies. The nature of these compounds and the systemic delivery of the drug can cause significant toxicities, or side-effects, which necessitate a break in treatment and provide an opportunity for tumor resistance to the agent to develop. Recently, a new group of platinum compounds, platinum (IV) compounds, have been investigated for use as an improved anti-cancer treatment, with promising results. Our investigators previously developed a nitroplatinum (IV) complex, which inhibits pro-survival proteins and releases nitric oxide to induce cell death with potentially less toxicity to the patient.

Our investigators have now developed a system of tumor-specific delivery of the nitroplatinum (IV) complex by coupling the agent to biotin, a vitamin used in cellular metabolism throughout the body. Research has shown that the amount of biotin used by tumor cells is significantly higher than the amount used by the rest of the body. The biotin coupled to the nitroplatinum, therefore, can target tumor cells for a more direct delivery of the anti-cancer compound, which spares exposure of healthy, normal cells to the agent.

ADVANTAGES:

- Platinum (IV) compounds have potential as effective, safe alternatives to platinum (II) compounds
- Nitroplatinum/biotin complex targets delivery to tumor cells to reduce toxicities seen in systemic drug delivery
- Therapy can be used for treatment of many tumor types

Tumor-Specific Delivery of Chemotherapy Agent



Nitroplatinum complexes (CPA-1 and CPA-7) induce apoptosis in tumor cells (top) in mice, but not in normal mouse cells (bottom)