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Albumin-binding Cisplatin Prodrug BTP-114

National Cancer Institute

Source

National Cancer Institute. *Albumin-binding Cisplatin Prodrug BTP-114*. NCI Thesaurus. Code C131607.

A proprietary, albumin-binding platinum (Pt)-based complex containing a prodrug form of the platinum compound cisplatin and a maleimide moiety, with an ability to strongly and selectively bind human serum albumin (HSA), and with potential antineoplastic activity. Upon intravenous administration, the maleimide group of BTP-114 rapidly conjugates with HSA in the bloodstream; this prolongs the blood circulation, enhances the half-life, and alters the biodistribution of BTP-114, as compared to cisplatin alone. Thus, BTP-114 demonstrates enhanced extravasation to the tumor, an increased accumulation in the tumor tissue and enhanced uptake by cancer cells. The prodrug form is reduced in the hypoxic tumor cell environment, which releases the highly cytotoxic active metabolite cisplatin. Once inside the tumor cell, cisplatin binds to nucleophilic groups, such as GC-rich sites, in DNA and induces intrastrand and interstrand DNA cross-links, resulting in apoptosis and cell growth inhibition. Compared to cisplatin alone, BTP-114 has improved selectivity towards tumor tissue, thereby enhancing efficacy while reducing systemic toxicities.