



CANCER PREVENTION & RESEARCH INSTITUTE OF TEXAS

Award ID:
RP160813

Project Title:
Nanoparticle Prophylaxis for Protection from Chemotherapy Ototoxicity

Award Mechanism:
High Impact/High Risk

Principal Investigator:
Chatterjee, Dev

Entity:
Acelerox

Lay Summary:

Cisplatin chemotherapy compounds kill cancer cells by damaging DNA preventing the cancer from growing. Due to its curative successes cisplatin is a standard of care for a broad spectrum of cancers, including cancers of the brain, breast, blood, kidney, colon, lung and head and neck, among others. Undesirable acute and long lasting side effects cause patients to terminate cisplatin treatment or to choose less effective treatments because of damage to normal functioning non-dividing cells and organs—such as in the hearing and balance organs. In >60% of pediatric lymphoma patients dose-escalating cisplatin therapy damage to the hearing and balance systems (called ototoxicity) leads to progressive and permanent high frequency hearing loss that progress to lower frequencies with increasing cumulative dose, and can cause tinnitus and acute vertigo. There are no therapies approved by the Federal Drug Agency (FDA) to prevent or reverse side effects of chemotherapy-induced injury and late effects of treatment on the hearing and balance, brain, and kidney systems. The objective of this proposal is to develop a nanoparticle antioxidant intervention that will reduce platinum ototoxicity while maintaining dose intensity or allowing dose escalation, and without interfering with platinum tumoricidal effects, which are urgently needed. The nanoparticle antioxidant treatment might also prevent acute kidney injury and chemo brain effects of platinum chemotherapy, which with hearing loss greatly impair the quality of life of cancer patients.