An Oxaliplatin Crosslinker for the Formation of Drug Delivery Nanoparticles
Technology #17532

Applications

This technology is a nanoparticle-based delivery method for the chemotherapeutic oxaliplatin that has applications as a cancer therapeutic.

Problem Addressed

Platinum-based chemotherapies are one of the most effective and widely used chemotherapies for solid tumor malignancies including testicular cancer, ovarian cancer, lung cancer, and breast cancer. However, platinum-based chemotherapeutics also have very high toxicity, and side effects can often limit the dose given to patients. This invention is a novel nanoparticle-based method to deliver platinum-based chemotherapies to reduce toxic side effects while maintaining therapeutic efficacy.

Technology

This technology uses brush arm star polymers (BASPs) nanoparticles to package oxaliplatin, a platinum-based chemotherapeutic. The nanoparticles are composed of an oxaliplatin core surrounded by a corona of highly branched hydrophilic BASPs. The nanoparticles efficiently self-target to tumors, where they then release the chemotherapeutic payload. This delivery method protects the rest of the body from harmful side effects and maximizes drug concentration within the tumor. The chemotherapeutics irinotecan and 5FU, which are frequently used in combination with oxaliplatin, can optionally be packaged along with oxaliplatin in the BASP nanoparticle. The triple combination therapy BASPs demonstrate striking effectiveness in a mouse transplant model of ovarian cancer and a significant portion of the mice display complete tumor eradication. The chemotherapeutic nanoparticles are well tolerated and display minimal toxicity in mice.

Advantages

- Controlled release nanoparticles for oxaliplatin delivery
- Reduced toxicity compared to traditional oxaliplatin therapy
- Oxaliplatin can be packaged singly or in combination with irinotecan and 5FU
- Highly effective in in vivo transplant models

Categories For This Invention:
Life Sciences
Clinical Applications
Oncology
Therapeutics
Chemotherapy
Drug Delivery

**Intellectual Property:**

Drug delivery polymers and uses thereof  
Issued US Patent  
Drug delivery polymers and uses thereof  
US Patent Pending  
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