TECHNOLOGY SUMMARY

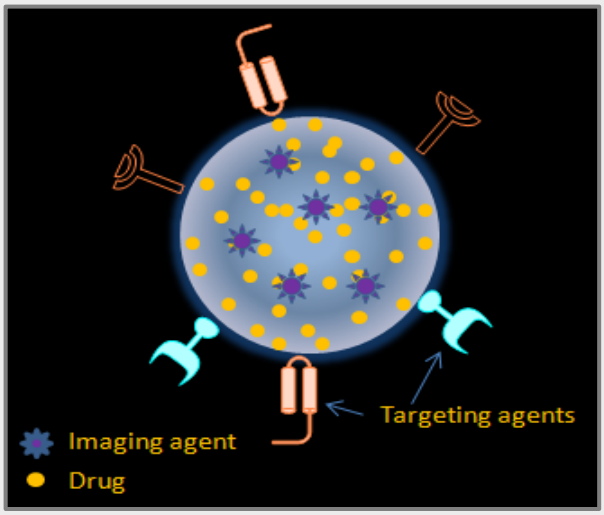
Activated Polymeric Nanoparticles for Targeted Drug Delivery in Cancer Therapy

Description:

Researchers at University of North Texas Health Science Center have developed an activated polymeric nanoparticle for targeted drug delivery applications. The method and composition includes a biocompatible polymer and an amphiphilic stabilizing agent associated with a spacer compound. The spacer compound contains one or more electrophiles that selectively react with nucleophiles on a targeting agent and place the targeting agent on the exterior surface of a biodegradable nanoshell. This technique helps in potentiating active targeting to tumor tissue for improved therapeutic efficacy and reduced drug related side effects.

Market Need:

Approximately 14 million new global cases of cancer are diagnosed annually with over 8 million deaths annually. Drug delivery is a significant challenge in cancer therapy due to the difficulty of delivering effective drug concentrations to the target site and potentially harmful side effects that can occur by nonspecific tissue distribution of active agents. There is a significant need for novel cancer drug delivery technologies. The global oncology drug delivery market is expected to generate over $100 billion annually.



Benefits and Advantages:

- Biodegradable nanoshell may encapsulate various active agents, such as a plasmid DNA, siRNA, proteins, small molecules, or anti-cancer agents for controlled intracellular delivery
- Nanoshell composition enables control of the nanoparticle size and the release rate of the active agent
- Nanoshell may be loaded with a chemotherapeutic agent or a combination of conventional radioisotopes for imaging and/or radiotherapy
- Targeted delivery of an active agent to the diseased tissue and cells can minimize whole body exposure to the active agent

"Novel technique potentiates active targeting to tumor tissue for improved therapeutic efficacy and reduced drug related side effects."

Technology Status: Tech 2007-010. Available for licensing or collaboration.
Intellectual Property: US Patent 9,023,395
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ADDITIONAL INFORMATION

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