

HOUSTON METHODIST INVENTION:

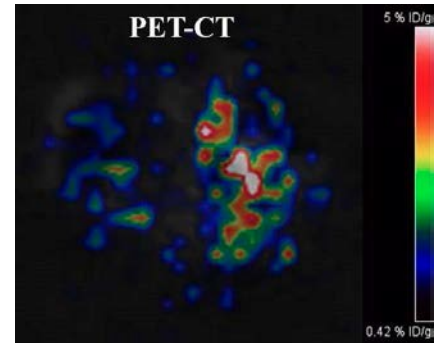
Discoidal Polymeric Nanoconstructs for Cancer Theranostics

Invention

The invention is discoidal, polymeric nanoconstructs with superior properties and a method of manufacturing the particles with improved control of particle size, shape, surface properties and mechanical stiffness. The particles are useful for systemic delivery of one or more imaging agents and / or therapeutic agents to particular cell types in the body.

Background

Many cancer therapeutics are toxic in themselves or are so unstable or insoluble that high doses are needed for systemic administration in order for an effective dose to reach the tumor site. Containing and targeting delivery of these active agents and imaging agents is important to deliver agents effectively to tumors and to reduce the systemic side effects of current drugs both by containing them and releasing only at the site of treatment and also by being able to give a lower overall dose of active agent.



Advantages

- Unprecedented tumor accumulation of over 10% ID/g tumor even without targeting means high signal to noise ratio for early cancer detection and high dose deposition of active agents for thermal ablation and multidrug therapy.
- Precise control over size, shape, surface and stiffness of particles produced.
- Can be loaded with a variety of payloads e.g. SPIO's for MRI imaging, ⁶⁴Cu for nuclear imaging, fluorophores for optical imaging etc.
- Can be loaded with anti-cancer drugs and imaging agents simultaneously for use as a theranostic.
- Can be used for thermal ablation therapy.
- Magnetically druggable / steerable to the site of treatment.
- Improved fabrication process improves the yield and quality of the particles compared to current methods.
- Reduced fabrication time.

For more information, contact the Office of Technology Transfer by e-mail at OTT@HoustonMethodist.org.



About Houston Methodist

Houston Methodist is comprised of a leading academic medical center in the Texas Medical Center® and four community hospitals serving the greater Houston area. Houston Methodist Hospital, the system's flagship, is consistently listed among U.S. News & World Report's best hospitals and we extend that same level of quality care across the system. Houston Methodist Research Institute is home to some of the world's brightest physician-scientists, working in a collaborative environment on more than 700 clinical trials. The Research Institute is making strides in the new 440,000-square-foot facility, bringing us even closer to medical breakthroughs in cardiovascular disease, cancer, infectious disease, neurosciences, diabetes and more.

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