



Ultrasound-assisted Delivery of Drug-loaded Chitosan Nanoparticles

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Market Needs: The increasing prevalence of cancer and chronic diseases has triggered the growth of the global drug delivery market. The global drug delivery market was valued at \$1,465.2 billion in 2024 and is predicted to reach \$2,205.5 billion by 2033, with a compound annual growth rate of 4.6% from 2025 to 2033. Ultrasound drug delivery systems represent a significant market opportunity, as they significantly reduce required dosage and side effects.

Our Technology: Ultrasound drug delivery systems can deliver drugs non-invasively to deeper tissues. Commercially available systems mainly utilize focused ultrasound transducers and microbubbles. Our technology utilizes a non-focused ultrasound transducer, eliminating the need for microbubbles, to deliver chemotherapy drugs using chitosan nanoparticles as drug carriers. It improves safety and drug delivery efficiency while also reducing the high cost of microbubbles. Furthermore, localized drug delivery enhances drug absorption and delivery to the target site, significantly reducing the required dosage and side effects. This technology can be used to treat a wide range of tumors, presenting a significant market opportunity.

Strength: This innovative technology utilizes a non-focused ultrasound transducer system for microbubble-free chemotherapy drug delivery, resulting in superior safety and drug delivery efficiency. Currently, no comparable system is commercially available, giving it a unique and pioneering advantage in the market. Furthermore, the research team combined expertise in both biomedical and engineering fields contributes to the robustness of the system.

Competing Products: (1) OxSonics Therapeutics/ SonoTran Platform; (2) EXACT Therapeutics/ Acoustic Cluster Therapy platform.

Intellectual Properties:

- (1) There is no relevant patent for this technology.
- (2) This research team combines research and development with experts and scholars in the biomedical and engineering fields, and has several years of experience developing ultrasound drug delivery platforms.

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