

Nanobubbles Deliver Targeted Cancer Drugs Using Ultrasound

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A new targeted drug delivery method uses ultrasound to image tumors, while also releasing the drug from "nanobubbles" into the tumor.

Cancer drugs can be targeted to tumors by delivering them in packets of nanoparticles, then releasing them with ultrasound. But this approach can be difficult because it requires a way to image the tumor prior to treatment.

Natalya Rapoport, Ph.D., D.Sc., of the University of Utah in Salt Lake City and colleagues describe a new method of drug delivery that may address this problem. Their study appears in the July 10 issue of the *Journal of the National Cancer Institute*.

Nanobubbles filled with the chemotherapy drug doxorubicin were injected into mice. The bubbles accumulated in the tumors, where they combined to form larger "microbubbles." When exposed to ultrasound, the bubbles generated echoes, which made it possible to image the tumor. The sound energy from the ultrasound popped the bubbles, releasing the drug. In mice treated with this method, the nanobubbles were more effective at blocking tumor growth than other nanoparticle delivery methods.

"Microbubble formulations have been developed for combining ultrasonic tumor imaging and ultrasound-enhanced chemotherapeutic treatment," the authors write.

Source: University of Utah

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