

Composite Nanotechnology Carrying Radioactive Gold Slows Tumor Growth

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In laboratory studies conducted at Roswell Park Cancer Institute (RPCI), researchers discovered that nanocomposite particles carrying radioactive gold directly to tumors reduced [cancer](#) growth by 45% in just eight days. This research was published in a recent issue of the [Journal of Nanomedicine: Nanotechnology, Biology and Medicine](#) and provides first evidence of the therapeutic use of tumor targeted radioactive nanodevices, according to lead authors [Lajos P. Balogh, PhD](#), Director of Nanotechnology Research and [Mohamed K. Khan, MD, PhD](#), Associate Director of Translational Research and a physician in the Department of Radiation Medicine at Roswell Park.

Each year, more than half a million cancer-related deaths and approximately 1.3 million new cases are reported in the United States. Radiotherapy has been used for almost all forms of cancer, however, one of the challenges is to deliver a lethal enough dose of radiation to the tumor while leaving the surrounding normal tissue unharmed.

The researchers who created the radioactive gold composite nanodevices (CNDs) used nanobrachytherapy to deliver them directly into prostate tumors in laboratory models. The single injection resulted in a statistically significant 45% reduction in tumor volume, when compared to an untreated group and a group injected with a nanodevice without radioactive gold. No clinical toxicity was observed during the experiments.

CNDs can be made in various sizes, carry different electric charges and hold diverse materials to deliver significantly more radiation than previously possible with antibodies. The approach also allows researchers to place imaging and therapy agents inside the CND permitting more functions to be carried out within each nanodevice.

"This form of treatment has the potential to offer an effective and well-tolerated alternative therapy for patients with localized [prostate cancer](#) in the future," said Dr. Balogh. "The versatile architecture of the CNDs offers the ability to transport drugs that meet the patient's individual need. Also, the capability of these nano clusters to absorb light suggests the potential to target and treat tumors during imaging."

Roswell Park Cancer Institute, founded in 1898, is the nation's first cancer research, treatment and education center and is the only National Cancer Institute-designated comprehensive cancer center in Upstate New York. RPCI is a member of the prestigious [National Comprehensive](#)

[Cancer Network](#), an alliance of the nation's leading cancer centers. Roswell Park has affiliate sites and collaborative programs in New York, Pennsylvania, and in China.