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67

Cu

Copper

Copper-67

Advancing Next-Gen
Precision Theranostics

Feature of the Month

Copper-67

Copper-67 (Cu-67) is a short-range, beta-emitting radioisotope suitable for precision therapies to treat neuroendocrine tumours, breast and prostate cancers, along with future applications still undergoing research and exploration.

The Cu-67 Advantage

Cu-67 has a half-life of approximately 61.8 hours.

Cu-67 can deliver sufficient radiation energy to destroy targeted cells while limiting radiation exposure to surrounding healthy tissues.

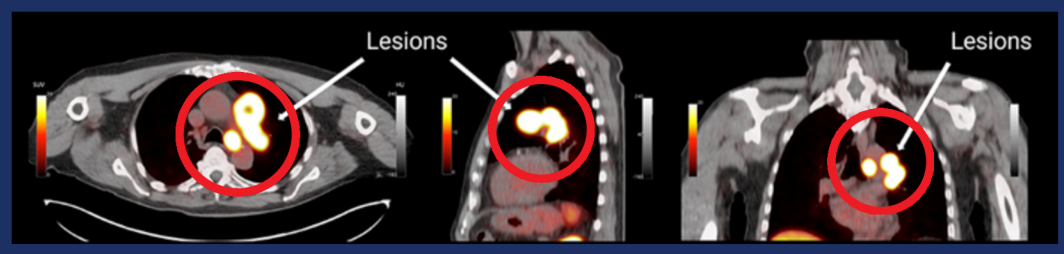
In therapy, Cu-67 is first anchored within a chelate, then attached to a targeting molecule, such as a peptide, antibody, or small molecule that is designed to recognize specific markers on cancer cells.

The radiopharmaceutical travels through the body and binds more strongly to cells that express the target markers.

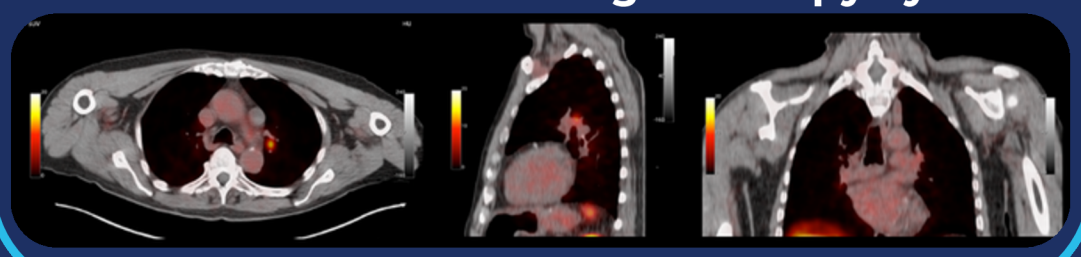
Patient Impact

Cu-64 SAR-bisPSMA PET/CT imaging before and after a single cycle of 8GBq Cu-67 SAR-bisPSMA (cohort 2)

Before Cu-67 treatment

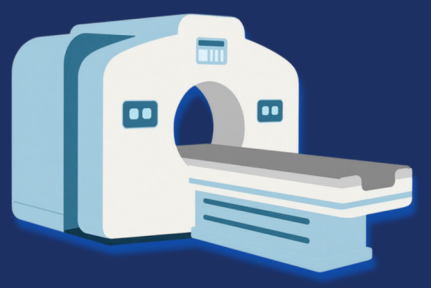


3 months later after single therapy cycle



Source: Clarity Pharmaceuticals

DID YOU KNOW?

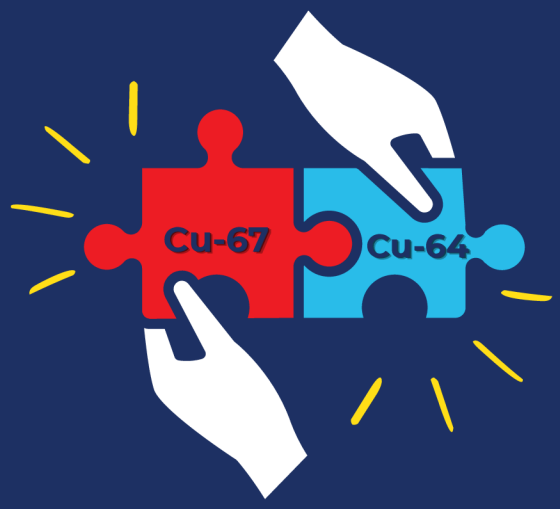


Cu-67 also emits diagnostic gamma rays, which clinicians can use for SPECT imaging to visualize the location and uptake of the treatment agent within the patient.

Copper-67

The “Perfect Pairing”

Cu-67 can be paired with chemically identical Cu-64 or Cu-61 diagnostic radiotracers to produce what is known as a “**perfect theranostic pair**”



A “perfect theranostic pair” means the same product and same element are used for both diagnosis and therapy.

Due to the unique characteristics of each copper isotope, they are suited for precision medicine, also known as Targeted Copper Theranostics.

DID YOU KNOW?

Through Iotron Medical Inc, Canada was the first commerical supplier of Cu-67.

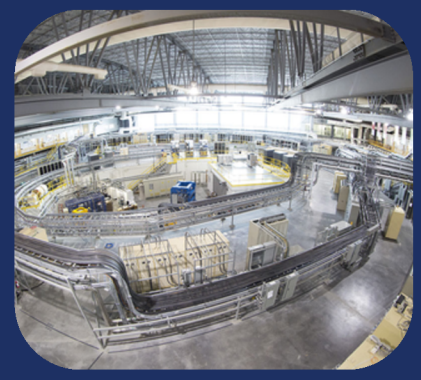
Iotron Medical Inc. supplies Cu-67 to the U.S., Canada, and Europe through its facilities in Saskatoon, Saskatchewan.

How is it made?

Cu-67 can be produced through nuclear reactors or particle accelerators like cyclotrons and electron accelerators.

Canada produces Cu-67 through an Electron Beam Linear Accelerator, with enriched Zinc-68 metal targets.

Separating Cu-67 from the target enables rapid and efficient enriched Zinc target recycling. The resulting Cu-67 has high specific activity and low impurity levels.



Canadian Light Source LINAC facility

Copper-67

IOTRON Medical Inc

Iotron has developed a proprietary High Activity Sublimation System aimed at improving the production economics and yield of copper-67. The advantages of high-activity sublimation include solvent-free separation, high target-material recovery through Zn-68 recycling, higher yield capacity, a cleaner product stream, faster processing and turnaround, and reduced radiation exposure and handling complexity. Together, these enable higher density targets and higher Cu-67 yields suitable for clinical use.

isoSolutions

isoSolutions is a global leader in the distribution, marketing, and sales of nuclear medicine products, including Cu-67, and facilitates the availability of the isotope for R&D, pre-clinical, clinical, and commercial applications in collaboration with suppliers all over the world.

CMIE Canadian Medical Isotope Ecosystem | Astral Systems | McMaster University Nuclear Operations & Facilities | Promation

Scale-67, a collaboration between Promation, Astral Systems, and McMaster University, is focused on establishing a proof-of-concept fusion-based approach for scalable, commercially viable Canadian production of Cu-67. The program will receive $500,000 CAD in funding from the Canadian Medical Isotope Ecosystem Development Fund.

AtomVie Global Radiopharma

AtomVie Global Radiopharma is a GMP manufacturer and global distributor of finished dose radiopharmaceutical products in Canada and over 28 countries, with capabilities to support Cu-67 radiolabelled products.

References

Biology Insights. What Is Copper-67 and How Is It Used in Medicine?

Canadian Medical Isotope Ecosystem (CMIE) Announces Promation as Funding Recipient from Third Call for Proposals

Clarity Pharmaceuticals.First participant treated at the highest dose level in Clarity's theranostic prostate cancer trial

Clarity Pharmaceuticals. Targeted Copper Theranostics: The Perfect Pairing of copper-64 and copper-67

Iotron Medical. The Copper-67 (Cu-67) Advantage

Research Gate.Cu Production Capabilities: A Mini Review

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