

# ISOTOPE

90

**Y**

Yttrium

**Yttrium-90**

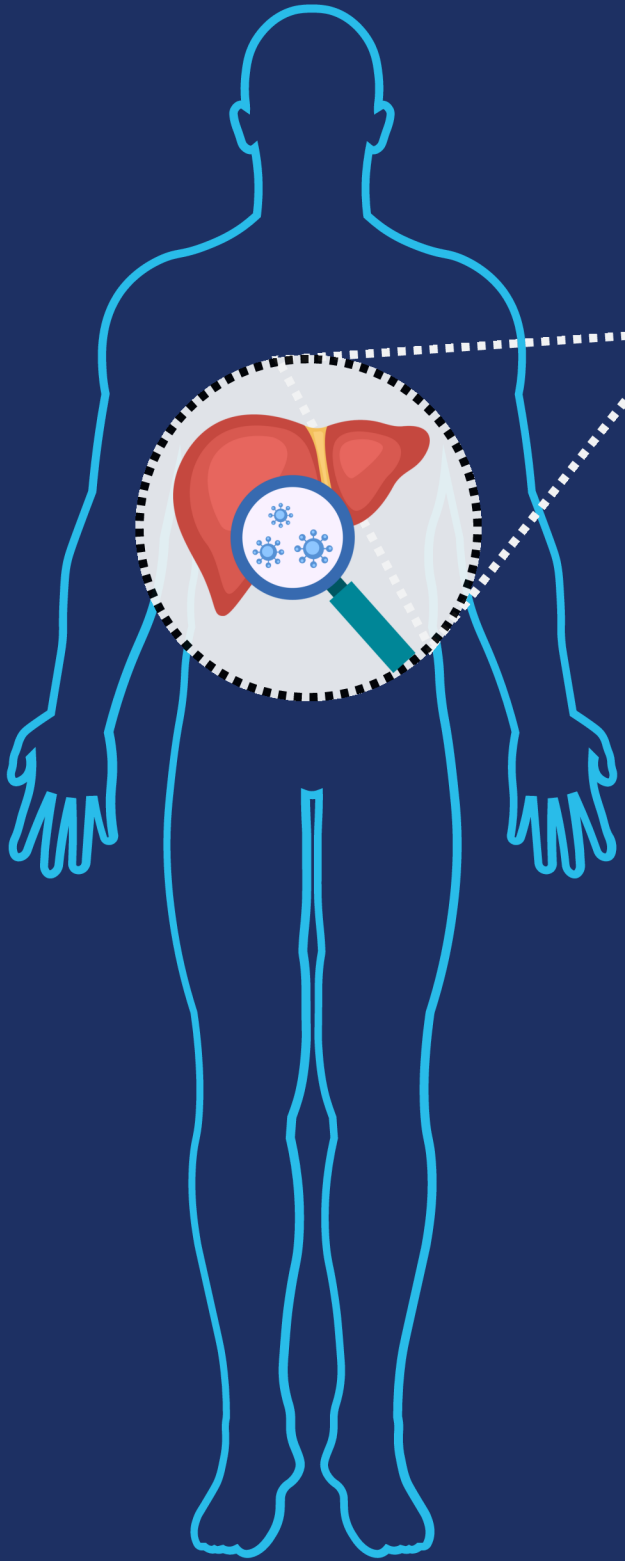
“Powerful interventional  
radiotherapy”



## Feature of the Month

# Yttrium-90

Yttrium-90 (Y-90) is commonly used to treat hepatocellular cancers, metastatic diseases, and has increasingly played a critical role in treating primary liver cancer by selectively depositing high doses of radiation more directly to the tumours.



Y-90 radioembolization is typically offered to patients whose tumours cannot be removed via surgery. This can be due to the health of the patient or the size, location or number of tumours present.

## DID YOU KNOW?



Y-90 has a half-life of 2.67 days.



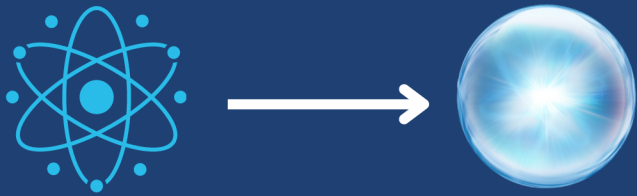
Y-90 microspheres are typically 20-30 micrometres in diameter, which is thinner than a strand of human hair.



Laurentis Energy Partners will begin producing Y-90 at a commercial scale in Ontario Power Generation's Darlington Nuclear Generating Station.

# Yttrium-90

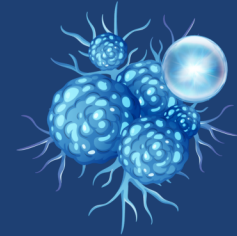
## How It Works



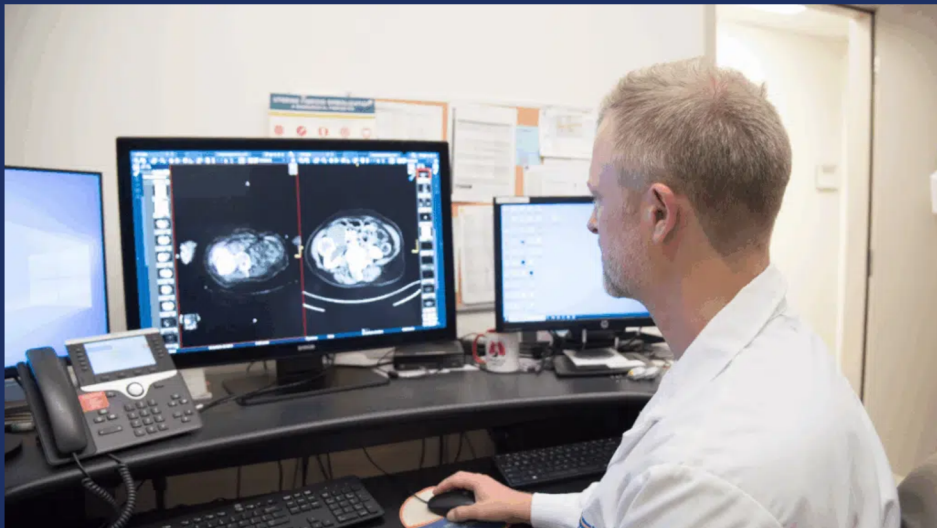
Inactive Y-89 is combined with aluminum and silicone oxides to form highly durable glass microspheres. Through neutron bombardment, the Y-89 becomes Y-90.



Through a catheter, the now radioactive glass beads flow into the tumour through its own blood vessels.



The radiation from the glass beads destroys the tumour cells with minimal effect on the surrounding healthy tissue.



## DID YOU KNOW?

Researchers at London Health Sciences Centre Research Institute launched a Phase II clinical trial using TheraSphere™ Glass Microspheres to deliver internal radiation therapy directly to kidney cancer tumours.

**10x**

Y-90 can deliver up to **10 times** more radiation than external therapy while preserving healthy tissue.



Y-90 radioembolic therapy has been used by physicians **since the late 1980s**.

# Yttrium-90

## *Case Studies of Canada's Leadership*



Through Nordion, Canada was a pioneer in developing TheraSphere™, a targeted radioembolization therapy device made of glass microspheres containing radioactive Y-90.

TheraSphere™ is distributed globally and continues to be manufactured in Ottawa through BWXT Medical Ltd. TheraSphere™ is currently approved for use in Canada and is funded in several provinces including:



- British Columbia
- Alberta
- Saskatchewan
- Ontario
- Quebec
- Nova Scotia
- New Brunswick



In November 2025, ABK Biomedical, based in Halifax, Nova Scotia, announced an important milestone: the first Canadian patient was successfully treated with Eye90 Microspheres® as part of its pivotal U.S. FDA Investigational Device Exemption study, ROUTE90.

In February 2026, ABK Biomedical announced another significant milestone with the completion of patient enrollment in the ROUTE90 study.

Eye90 Microspheres® are an investigational product being evaluated for safety and effectiveness within the FDA approved Route90 clinical trial.

# References

[ABK Biomedical Completes Enrollment in ROUTE90 Pivotal Study for Primary Liver Cancer](#)

[Boston Scientific TheraSphere™](#)

[Bridge Medical TheraSphere® - Innovative Treatment of Liver Cancer.](#)

[Canadian Agency for Drugs and Technologies in Health Yttrium-90 Microspheres \(TheraSphere® and SIR-Spheres®\) for the Treatment of Unresectable Hepatocellular Carcinoma](#)

[CBC News Ontario nuclear plant to produce material for life-saving cancer treatment](#)

[Cleveland Clinic Y-90 Treatment](#)

[Kingston Health Sciences Centre expands liver cancer treatment with cutting-edge Y90 therapy](#)

[Laurentis Energy Partners to produce Y-90 isotopes for life-saving cancer treatments globally](#)

[London Health Sciences Centre Research Institute Clinical trial targets kidney cancer with internal radiation](#)

[Mayo Clinic Targeted radiation therapy: Y-90 and liver cancer](#)

[National Center for Biotechnology Information Radioembolization Trial Utilizing Eye90 Microspheres™ for the Treatment of Hepatocellular Carcinoma \(HCC\)](#)

[The University of Texas MD Anderson Centre Y90 Radioembolization](#)