GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
**RAJYA SABHA**
**UNSTARRED QUESTION NO-2246**
ANSWERED ON 12/03/2026

## RADIOPHARMACEUTICAL PRODUCTS

2246. SHRI HARSH MAHAJAN

Will the PRIME MINISTER be pleased to state:-

(a) the purposes for which radiation technologies are being used in the medical and health sector in the country, including Himachal Pradesh;

(b) the details of radiopharmaceutical products developed/launched by the Department during the last three years till date and which of these products are available in Himachal Pradesh;

(c) whether Government has taken any steps for indigenisation and commercialisation of radiopharmaceutical products; and

(d) if so, the details thereof with specific reference to Himachal Pradesh?

## ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PRIME MINISTER'S OFFICE (DR. JITENDRA SINGH)

(a) Radiation technologies play a significant role in contemporary human healthcare and extensively used for therapeutic and diagnostic applications in healthcare, especially in cancer care in the country. These technologies are widely employed in evaluating organ function and diagnosis of diseases like cancer in a cost-effective non-invasive manner. Radiation technologies are also used for treating various types of cancers prevalent in our country. One of the key components of these technologies is radiopharmaceuticals-radioisotope-tagged drugs that are safe for human use and utilized in both diagnosis and therapy.

Another important radiation-based method is Brachytherapy, a form of internal radiation therapy. In this approach, radioactive sources are placed inside or near the tumor, allowing a concentrated radiation dose while minimizing damage to surrounding healthy tissues. Brachytherapy is commonly used to treat cancers of the prostate, breast, cervix, eye and skin. Department of Atomic Energy (DAE) has made significant contributions in this field. Iodine-125-ocuprosta seeds for the treatment of eye and prostate cancer,

and Ruthenium-106 (Ru-106) eye plaques for localized treatment of eye cancers are some of the major contributions.

Gamma radiation from Cesium-137 is widely used for blood irradiation to prevent transfusion-associated diseases. Gamma rays or electron beams are also used for radiation sterilization of heat-sensitive medical products such as syringes, catheters, surgical gloves, implants in packed condition by destroying microorganisms on medical devices.

(b) New products launched over the last 3 years are given in the following Table:

| S. No. | Name of product | Application |
|---|---|---|
| 1 | Medical grade high specific activity Molybdenum-99 for $^{99}Mo/^{99m}Tc$ generator | Parent of $^{99m}Tc$, the widely used diagnostic radioisotope |
| 2 | No carrier added (nca) $^{177}Lu$-DOTATATE | Treatment of neuroendocrine cancer |
| 3 | No carrier added (nca) $^{177}Lu$-PSMA-617 | Treatment of prostate cancer |
| 4 | Bhabhasphere with delivery system | Treatment of liver cancer |

The following listed nuclear medicine centres in Himachal Pradesh are registered with BRIT for the supply of radiopharmaceutical products:

i. Shri Balaji Super speciality Health care Pvt Ltd, Kangra, Himachal Pradesh
ii. Indira Gandhi Medical College, Shimla, Himachal Pradesh
iii. Atulaya Healthcare Pvt Ltd., Shimla, Himachal Pradesh

Further, Bhabha Atomic Research Centre (BARC) is placing significant efforts towards indigenous development of radiopharmaceuticals and allied products as cost-effective alternatives to imported radiopharmaceutical products. These radiopharmaceutical products are manufactured and supplied by Board of Radiation and Isotope Technology (BRIT), Mumbai. Nuclear medicine centers across the country utilize the radiopharmaceutical products supplied by BRIT. Some of the important radioisotopes / radiopharmaceutical products developed and made available during the last three years are mentioned in table below;

| S. No | Name of the Product | Application |
|---|---|---|
| 1 | $^{177}Lu$-DOTMP/$^{177}Lu$-EDTMP | Bone pain palliation |
| 2 | $^{177}Lu$-Hydroxy Apatite | Radiation synovectomy |
| 3 | $^{90}Y$-Hydroxy Apatite | Radiation synovectomy |
| 4 | $^{99m}Tc$-HYNIC-[cyclo(RGDfk)]$_2$ | Malignant tumor imaging |
| 5 | $^{68}Ga$-PSMA-11 | Prostate cancer imaging |
| 6 | $^{90}Y$-Glass microspheres (Bhabha Spheres) | Liver cancer therapy |

| | | |
|---|---|---|
| 7 | $^{177}$Lu-DOTATATE | Neuroendocrine tumor therapy |
| 8 | $^{177}$Lu-DOTA-Trastuzumab | Therapy of breast cancer expressing HER-2 receptors |
| 9 | Molybdenum-99 (Fission moly) | For the preparation of molybdenum-99/technetium-99m generator |

(c) & (d) All radiopharmaceuticals manufactured and supplied by BRIT are indigenously produced and commercially available within the country.

The radiopharmaceuticals produced and supplied by BRIT are distributed to **more than 400 nuclear medicine centres** across the country, including centres in Himachal Pradesh. Comprehensive details of all radiopharmaceutical products available for users nationwide can be accessed through BRIT's official e-portal: https://eportal.britatom.gov.in

It may be noted that **PET-based Fluorine-18 radiopharmaceuticals** are supplied only to **restricted regions in and around Mumbai and Kolkata.** This limitation is due to the **short half-life and expiry period of Fluorine-18** which necessitates rapid transportation and immediate clinical use after production.

BARC is constantly making R&D efforts for indigenous synthesis of peptide/small molecule ligands used for the preparation of clinically important radiopharmaceuticals for the diagnosis and therapy of various types of cancer. Additionally, collaborations are established with national institutes to popularise research in nuclear medicine as well as to tap their expertise in the field of nuclear medicine. Collaborations are also established with nuclear medicine centers for the translation of new radiopharmaceuticals from laboratory to the clinic. Subsequently efforts are made to scale up the radiopharmaceuticals to meet the demand of the country.

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