

RADIOPHARMACEUTICALS PRODUCTION AT IPEN/CNEN-SP

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The use of radioisotopes in medicine is certainly one of the most important social applications of Nuclear Energy. IPEN, and particular the Radiopharmacy Center, has a special place in the history of Nuclear Medicine in Brazil.

The production of radioisotopes and radiopharmaceuticals for use in Nuclear Medicine started with ¹³¹I in the late 50s at IPEN. Since then there has been a significant and constant increase in the demand for diagnostic and therapeutic radiopharmaceuticals over the years and nowadays 38 products are in routine. Due to this production Brazil reached over 2 million nuclear medical procedures in 380 Diagnostic Clinics, Hospitals and Center of nuclear medicine.

The Radiopharmacy Center is organized in six activities areas: Production; Quality Assurance; Quality Control; Research, Development and Innovation; Infrastructure and Maintenance Support; and Cyclotron Accelerator.

The Production area carries out the everyday production of 10 primary radioisotopes, 12 labeled molecules and 16 lyophilized kits for labeling with ^{99m}Tc. The Cyclotron Accelerator Division is responsible for the operation of two Cyclotrons (18 and 30 MeV) and carries out the irradiation for obtaining the cyclotron-produced radioisotopes such as ¹⁸F and ¹²³I. Year by year the demand for ⁹⁹Mo/^{99m}Tc Generator production has been increased, nowadays the Radiopharmacy Center produces 400 generators per week. Besides, the ¹³¹I solution and ¹³¹I capsule production was increased, however the production of ¹⁸F-FDG was decreased due to the assembling of new PET production centers.

New radiopharmaceuticals are in developing such as Bombesin derivatives labeled with ⁹⁰Y and ¹⁷⁷Lu, ¹⁷⁷Lu-Anti-CD-20; ⁶⁴Cu-ATSM, HYNIC-TATE, MAG3 for labeling with ^{99m}Tc. These radiopharmaceuticals are in stages of pre clinical and clinical trials and soon they will be offered for the nuclear medicine community. Through a program of continuous progress the Radiopharmacy Center improves its facilities, equipment, human resources and upgrades the technologies involved to meet the growth of the Brazilian market radiopharmaceuticals applied in diagnostics and therapy. Relying on employees with specialized and skilled training in Radiopharmacy and related areas, seeks to maintain the state of art in the development of new radiopharmaceuticals.