



Forum for Nuclear Cooperation in Asia(FNCA) Case-Study Session : SP2024



Production of radioisotopes for medical use and demand: Thailand

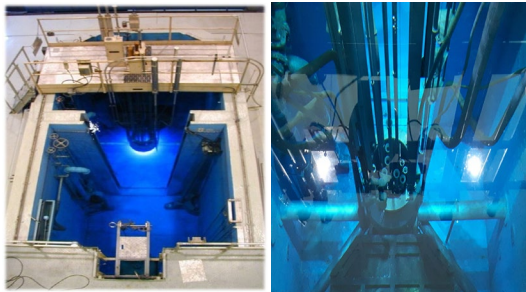
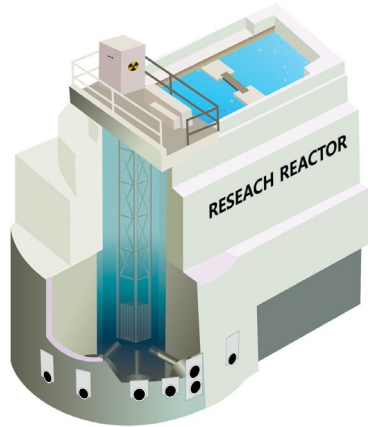
Mr. Thanete Doungta
Radioisotope center
Thailand Institute of Nuclear Technology (Public organization)



Production facility: Thailand



Nuclear research reactor - 1



TRIGA Mark II (1962)

- ❖ Sm-153
- ❖ P-32

Cyclotron- 7



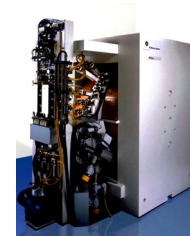
Bangkok Cancer Hospital Wattanosoth (2005)

- ❑ Company: ACSI
- ❑ Model: TR-19
- ❑ Energy: Proton = 19 MeV Deuteron = 9 MeV



Chiang Mai University (2012), **Siriraj Hospital (2014)** and **National Cyclotron and PET Center, Chulabhorn Hospital (2021)**

- ❑ Company: Sumitomo
- ❑ Model: HM20S
- ❑ Energy: Proton 20 MeV, Deuteron 10 MeV



National Cyclotron and PET Center, Chulabhorn Hospital (2006)

- ❑ Company: GE Healthcare
- ❑ Model: PETtrace800
- ❑ Energy: Proton = 16.5 MeV Deuteron = 8.4 MeV



Prince of Songkla University (2021)

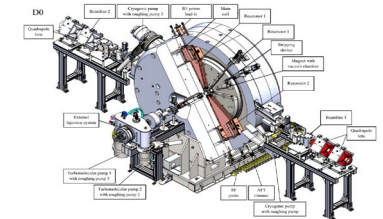
- ❑ Company: IBA
- ❑ Model: Cyclone® KIUBE
- ❑ Energy: Proton 20 MeV, Deuteron 10 MeV

Routinely

- ❖ F-18
- ❖ C-11
- ❖ O-15

In process

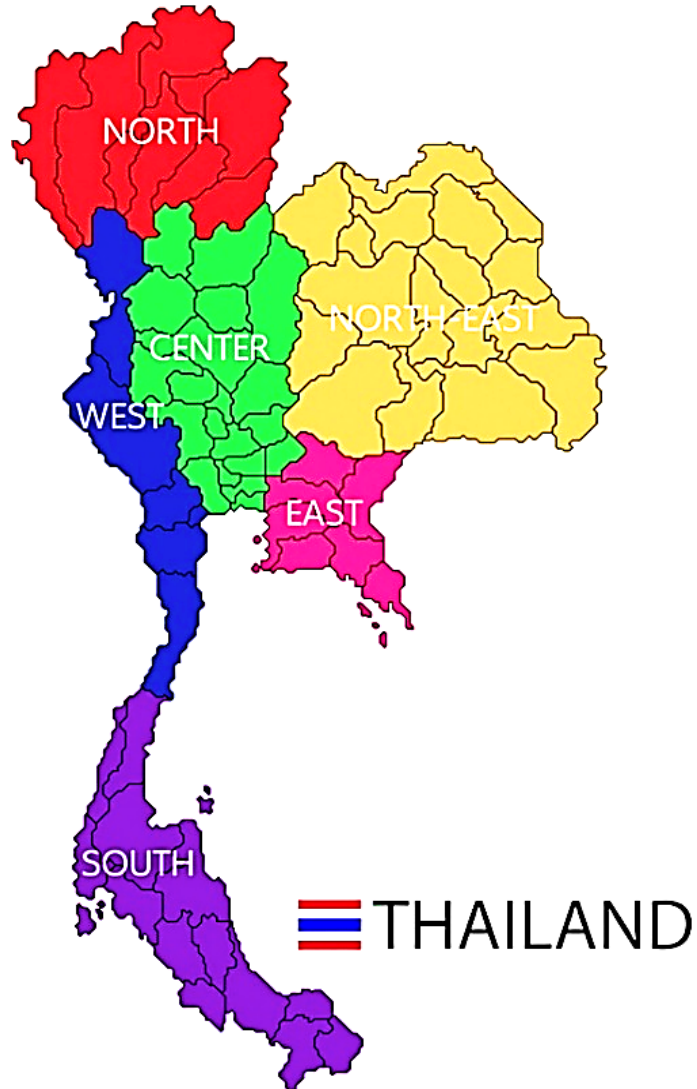
- ❖ Cu-64
- ❖ Zr-89
- ❖ Ga-68
- ❖ I-123/ 124



Thailand Institute of Nuclear Technology (2021)

- ❑ Company: Rosatom, Russia
- ❑ Model: MCC-30/ 15
- ❑ Energy: Proton = 30 MeV, Deuteron :15 MeV

Ongoing processed



Government Hospital

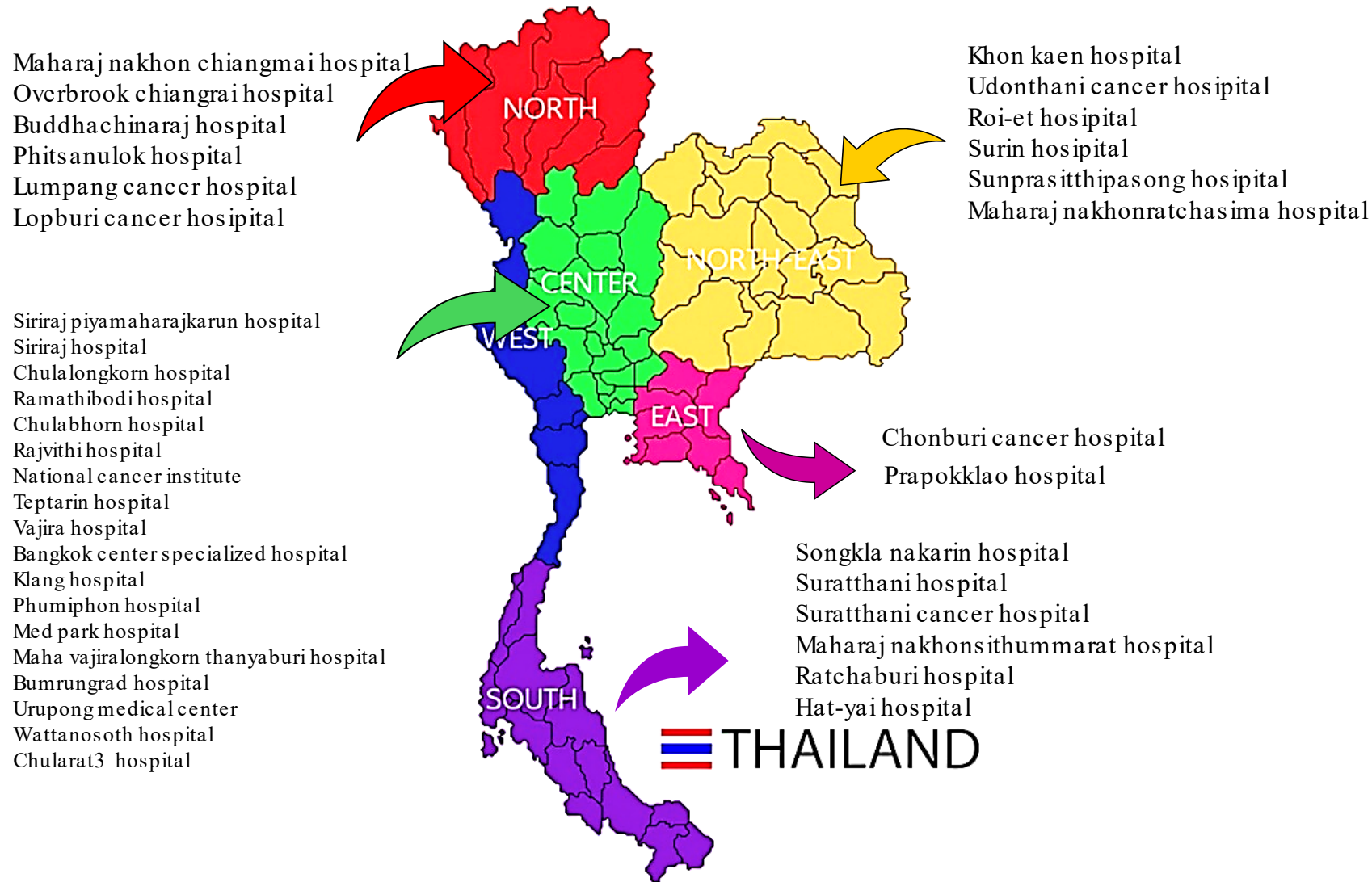
- ❑ General hospitals: 24
- ❑ Cancer hospitals: 7

Private Hospital

- ❑ General hospitals: 4
- ❑ Cancer hospitals: 3

Total: 38

Nuclear medicine center : Thailand





Radiopharmacy/ Radiopharmaceutical producer : Thailand



Centralized radiopharmacy

- ❖ Thailand Institute of Nuclear Technology: TINT
- ❖ National Cyclotron and PET Centre, Chulabhorn Hospital
- ❖ Global Medical Solution; GMS
- ❖ Watthanosoth; BDMS
- ❖ Siriraj Hospital, Mahidol University
- ❖ PET&CT Cyclotron Center, Chiang Mai University
- ❖ Prince of Songkla University

Industry/ Importer

- ❖ Biogenetech (Thailand)
- ❖ Goalbal medical solution (Thailand)
- ❖ Nuclear system
- ❖ Biomedica (Thailand)
- ❖ PerkinElmer





Available radiopharmaceuticals and demand: Thailand

Radioisotope

Diagnosis

Therapy

SPECT

PET

I-131

Sm-153

Sr-89

Lu-177

Y-90

Ac-225

Tc-99m

Ga-67

Tl-201

In-111

F-18

C-11

O-15

Ga-68

Cu-64

Zr-89





Available radiopharmaceuticals and demand: Thailand

Tc-99m

- Tc-99m Dextran
- Tc-99m DISIDA
- Tc-99m DMSA
- Tc-99m DTPA
- Tc-99m ECD
- Tc-99m Hynic-TOC
- Tc-99m MAA
- Tc-99m MAG3
- Tc-99m MDP
- Tc-99m MIBI
- Tc-99m Phytate
- Tc-99m Stannous
- Total: 1000 dose/week

F-18

- F-18 FDG : 200-250 dose/week
- F-18 NaF: 100-120 dose/week
- F-18 PSMA: 10-15 dose/week
- F-18 Fluorocholine
- F-18 THK5351
- F-18 FLT
- F-18 Florbetapir
- F-18 FMISO
- F-18 Florbetaben
- F-18 PI2620

Ga-68

- Ga-68-PSMA: 10-15 dose/week
- Ga-68 DOTATATE: 5-10 dose/week
- Ga-68 FAPI: 5- 10 dose/week
- Ga-68 Pentixaflor (Oncology Research)
- Ga-68 CU101 & 102 (Brain Research)
- Ga-68 CE-PSMA (Oncology Research)

Lu-177

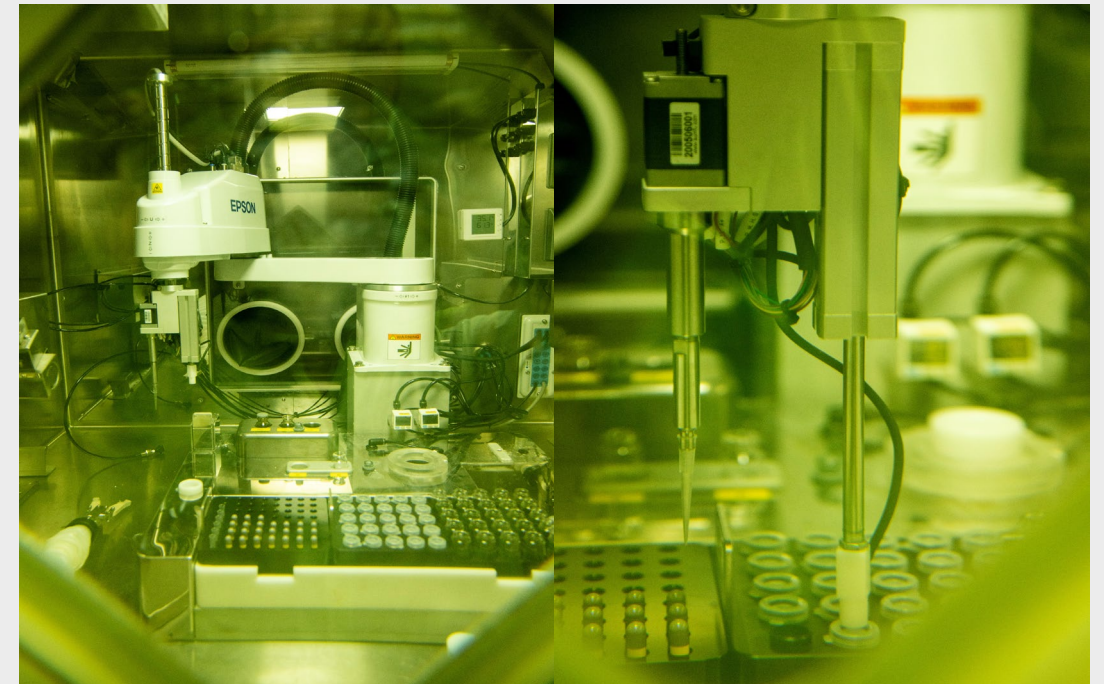
- Lu-177 PSMA: 50- 100 dose/year
- Lu-177 DOTATATE: 20 – 30 dose/year
- Lu-177 FAPI: 5 -10 dose/year

Ac-225

- Ac-225 PSMA: 10 dose/year



Radiopharmaceuticals : TINT



20 Ci/week



I-131 Capsule & Solution

Primary Isotope



Tc-99m Hynic-TOC

Ga-68 PSMA/DOTATATE

Lu-177 PSMA/DOTATATE



I-131 MIBG

I-131 Rituximab

Sm-153 EDTMP

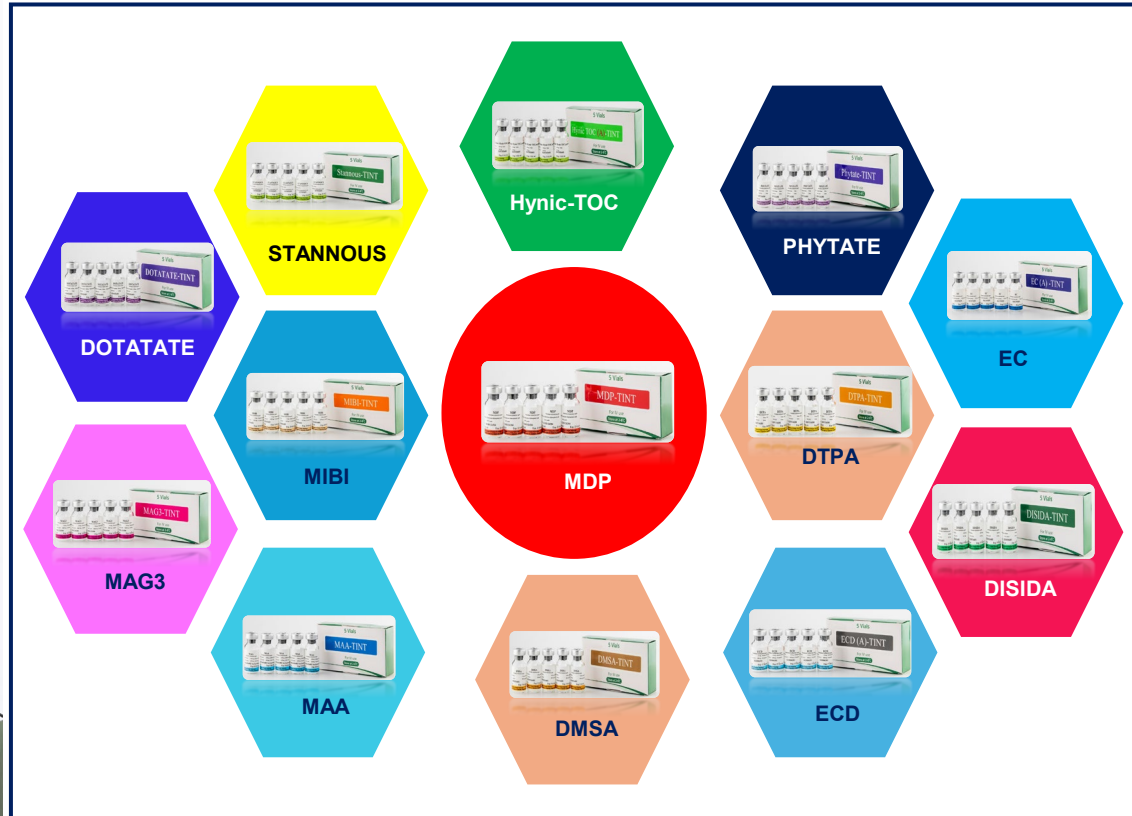


Radiolabeled compounds

Radiopharmaceuticals : TINT



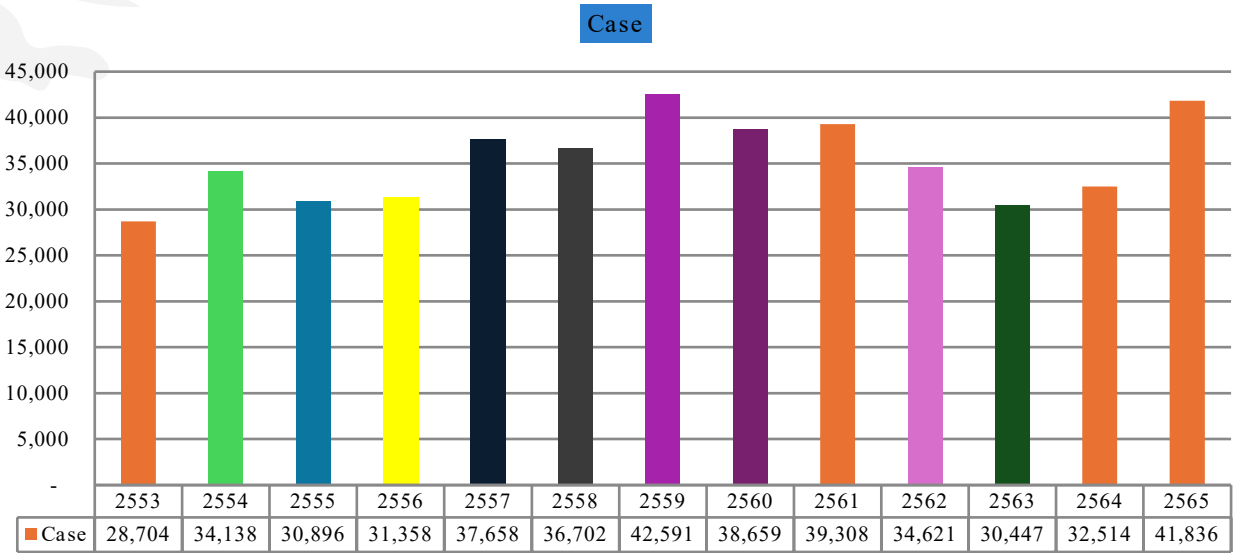
Radiopharmaceutical kit





Radiopharmaceuticals : TINT

I-131 radiopharmaceuticals



Tc-99m radiopharmaceutical

Cold kits	Vial	Case/vial
Dextran	390	1
DISIDA	304	1
DMSA	220	1
DTPA	418	2
ECD	153	1
Hynic-TOC	51	1
MAA	226	3
MAG3	1018	2
MDP	3020	5
MIBI	930	10
Phytate	390	2
Stannous	2501	2

Thank you

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