2031 Trivalent Technetium Labeled Glycopeptide, Bleomycin (BLM): Reaction with Dioxygen.

Kazuko Horiuchi Suzuki, Akira Yokoyama. Kyoto University, Fac. Pharmaceutical Science.

Affinity of BLM, an antibiotic clinically used against malignant lymphomas and squamous cell carcinomas, for trivalent metals, Fe(III), Co(III), Ni(III) and their DNA binding have been well reported, so that, radiolabeling of BLM with the metal 99m-technetium in trivalent state [(Tc(III)-BLM] has been carried out as a new approach for formulating Tc containing porphyrin-based tumor agent. Experimentals with Ehrlich Ascites Tumor (EAT) cells and EAT bearing mouse indicated faster EAT cell uptake and better tumor/blood (Tu/Bl) ratio than the high valence state BLM. In the presence of dioxygen, the formed Tc(III)-BLM species presented higher Tu/Bl ratio but being highly oxidizing, it induced the generation of free radicals; this latter phenomenon traced by the in-vitro and in-vivo detection of free pertechnetate. In order to improve the Tc(III)-BLM accumulation in tumor, the effect of some free radical scavenger or free radical trapping agent is to be tested.

2032 Tumor monitoring after fractionated radiotherapy using ^{18}F-FDG, ^{3}H-Thymidine and ^{14}C-Methionine

Reinhardt M, Kubota K, Yamada S, Fukuda H (Dept. Nucl. Med. Radiol., IDAC, Tohoku Univ. Sendai), Moser E (Dept. Nucl. Med., Albert-Ludwigs-Univ. Freiburg, Germany)

In order to compare 3 PET-tracers for monitoring radiotherapy, a rat AH 109 tumor model is used 6 days after 1, 2, 4, 6 and 8 doses of 5 Gy radiation. Tumor uptake of each tracer is expressed as DUR. DUR of Methionine and Thymidine decreases significantly faster than that of FDG after single dose, but reach a similar level after 2 doses. DUR of Thymidine and FDG but not of Methionine shows a further decrease by increasing doses. FDG tumor uptake after 8 doses is lower than that of Methionine and Thymidine, but remains higher than that of normal tissue after 2, 6 and 8 fractions.

2033 Comparison of uptake mechanisms of Tc-99m-Tetrofosmin, Tc-99m-MIBI and Tl-201 in tumor cell lines.

Ali Syed Arbab, Kiyoshi Koizumi, Tsutomu Araki. Yamanashi Medical University.

Cellular uptake mechanism of Tc-99m-Tetrofosmin (TFN) was studied and compared with those of Tc-99m-MIBI (MIBI) and Tl-201 in human B-cell lymphoma (HBL-2) and renal cortical cell carcinoma (SW-13). Specified numbers of cultured cells were incubated with TFN, MIBI and Tl-201 for various time intervals. Uptake at one hour was selected for reference uptake. Cells were also pretreated with either nigericin, an ionophores that increases mitochondrial potentiality, CCCP, an uncoupler of oxidative phosphorylation or ouabain, a cell membrane Na, K-ATPase inhibitor, to see the effects on cellular uptake of the radiophamaceuticals (RP). Uptake of TFN showed relation to both mitochondrial and cell membrane potentiality but uptake of MIBI showed pattern of mitochodrial accumulation and was not related to cell membrane potentiality, whereas 75-80% of Tl-201 uptake depended on cell membrane potentiality. None of these RP showed uptake to the dead cells. Effects of nigericin, CCCP and ouabain were less in SW-13 cell lines.

2034 Serum total T3,T4,TSH concentrations in Fullterm(FT),Small-for-Gestational Age(SGA)and Preterm(PT) Vietnamese newborn babies during first seven days of life.

Mai Trong Khoa,Phan Sy An et al.
Depart. of Nucl. Med.,Hanoi Medical College, Bach Mai University Hospital-Hanoi VIETNAM.

Levels of T3,T4,TSH in sera of 136FT,103SGA, 94PT and in cord blood of 46FT,42SGA,40 PT babies were measured by RIA.Serum levels of T3,T4 were highest in FT,lowest in PTbabies. In all FT,SGA,PT serum levels of TSH weren't significantly different,and were below 4mU/l after the 5th day of life,so for diagnosis of congenital hypothyroidism,measurments of T4,TSH should be performed from this time.

2035 The changes of T3,T4,TSH,Insulin and AFP,CEA concentrations in serum of healthy Vietnameses and patients with some endocrine diseases and cancer.

Phan Sy An,Mai Trong Khoa et al.
Department of Nuclear Medicine,Bach Mai University Hospital - Hanoi VIETNAM.

The authors have determined T3,T4,TSH, Insulin and AFP,CEA concentrations by RIA Method in serum of 723 healths in many regions of Vietnam.The determinations were made also in 803 patients with some endocrin diseases and cancer.So our ranges of determined substances are representative and can be used in all over of Vietnam and have great values in diagnosis and treatment.

2036 SPECT SCANNER WITH PET COINCIDENCE CAPABILITY

H.Hines,P.Nellemann,ADAC Laboratories,Milpitas,CA, USA,G.Muehllehner,UGM Laboratory,Philadelphia,PA,USA

Adding PET (Positron Emission Tomography) coincidence capability to a dual head SPECT scanner extends the usefulness of the instrument to allow imaging of PET radiopharmaceuticals such as FDG for a wide range of new clinical procedures including whole body tumor surveys. Coincidence circuits were added to a SPECT scanner with digital detectors. The detectors use small local centroid position calculation and multiple trigger channels to achieve the countrate capability necessary for coincidence detection under clinically acceptable conditions.

The system has been evaluated clinically and has been shown to have a sensitivity exceeding twice that of a collimated system. Furthermore the spatial resolution is approximately three times as good as a collimated system.