55

2'-IODOSPIROPERIDOL: A NEW RADIOPHARMACEU-
TICAL FOR SPECT STUDIES OF DOPAMINE
RECEPTORS. H.Saji, T.Tokui, Y.Kuge,
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The usefulness of 11-C and 18-F labeled
butyrophenone compounds for the detection
of dopamine receptors (DAR) constitutes a
field of great interest. Being aware of
the prompt availability of 123-I, our
effort was directed to the development of
butyrophenones iodinated at the ortho
position of the p-fluorobutyrophenone
moiety, postulated as the position causing
lower alteration in receptor binding
environment. Various iodinated
butyrophenones were synthesized from
correspounding amine compounds by the
Sandmeyer reaction. The radiolabeling
easily carried out by radioiodine exchange
reaction. Among synthesized compounds,
the 2'-iodospiroperidol (ISP) showed the
highest affinity for DAR by the vitro
binding assay. On the other hand, this
compound showed relatively low affinity for
serotonin receptor. The in vivo
biodistribution and macroautoradiographic
studies were compatible with results
obtained in the in vitro study, showing
higher accumulation in the striatum than in
other brain regions. Thus, the 2'-ISP is
a promising candidate for SPECT study of
DAR, provided the 123-I becomes readily
available.

56

^{18}F-LABELLED PHENYLALANINE AND TYROSINE —
SYNTHESIS AND FUNDAMENTAL STUDY FOR THE
AVAILABILITY. M.Murakami, K.Takahashi,
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Amino acids labelled with positron
emitting nuclide is a useful for the
measurement of protein synthetic rate.
At present, carbon-11 labelled amino acid
is popular, but its physical half life is
thought to be short for sufficiently long
lasting data acquisition. Therefore, we
tried the fluorination of phenylalanine
and tyrosine. The fluorination with
^{18}F-F$_2$ and ^{18}F-AcOF was compared to obtain
^{18}F-phenylalanines. L-phenylalanine in
CF$_3$COOH trapped ^{18}F-AcOF more effectively
than ^{18}F-F$_2$. The main product was 2-^{18}F-
phenylalanine (28.4 ± 18.5 %) when ^{18}F-
AcOF was used as a reagent. Lower radio-
chemical yield of ^{18}F-phenylalanines and
significant formation of by-products were
observed in the case of ^{18}F-F$_2$. Similar-
ly, 3-^{18}F-tyrosine was obtained with good
yield (28.8 ± 4.1 %) when ^{18}F-AcOF was
used as a precursor.
In the rat brain, about 30 % of radio-
activity was fixed in macromolecules and
most of free radioactivity was existed as
amino acids at one hour after 2-^{18}F-
phenylalanine injection. In the case of
3-^{18}F-tyrosine, significant amount of
radioactivity existed as keto-acids.
Catecholamine fraction had negligible
radioactivity in both cases.

57

RADIOPHARMACEUTICALS AS AMINO ACID METABO-
LISM MARKER (7). BASIC STUDY FOR PANCREAS
FUNCTION DIAGNOSIS USING L-[S-METHYL-C-11]-
METHIONINE. Y.Fujibayashi, K.Kawai, K.
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C-11-natural amino acids (AA) have been
evaluated as pancreas imaging radiopharma-
cuetical. L-[S-methyl-C-11]-Methionine (S-
methyl-Met), an easy and rapidly
synthesized amino acid is already in use in
clinical studies. It will be soon become
available in our hospital and the AA meta-
bolic rate measurement for functional diag-
nosis using compartment model analysis was
considered of interest. For function diag-
nosis, we studied the metabolic retention
system of S-Met in pancreas. As a first
approach, clinically applicable FDG-type 3-
compartment model was used. Upon the
analysis of the radioactivity in pancreas
and its protein fraction, great discrepancy
of calculated data from the observed data
was visualized. The causal being assigned
to the considerable amount of low molecular
weight metabolites (LMWM), confirmed by TLC
of 5 % TCA soluble pancreas fraction. Upon
the assignment of a compartment for the
LMWM, the model fitted well to observed
data. Thus the present results indicated
the difficulty of FDG-type 3-compartment
model analysis in S-methyl-Met study and
the necessity to estimate the participation
of Met specific metabolic pathway along
with protein synthesis.

58

RADIOPHARMACEUTICALS AS AMINO ACID METABO-
LISM MARKER (8). THE EFFECTS OF LABELED
POSITION OF C-11-METHIONINE ON ITS
METABOLIC BEHAVIOR. K.Kawai,
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Kyoto & Fukui Medical College, Fukui.

L-[S-methyl-C-11]-Methionine (S-methyl-
C-11-Met) accumulation in pancreas has been
considered as reflecting the protein
synthesis function in clinical studies,
however as previously shown, this
represents part of the agent metabolic
pathway. In order to study the influence
of labeled position on the metabolic
selectivity followed S-methyl-C-11-Met,
three different labeled L-Met, S-methyl-
Met, L-[1-C-14]-Methionine (1-Met) and L-
[3,4-C-14]-Methionine (3,4-Met) were
selected and the mice biodistribution was
surveyed. Pancreatic accumulation of S-
methyl-Met and 3,4-Met was higher than 1-
Met, but protein incorporation (5 % TCA
insoluble fraction) in pancreas was, in S-
methyl-Met and 3,4-Met, 50-66 % of the
accumulated radioactivity at 30-60 min.
post i.v., while an increase to 90 % was
detected in 1-Met. This result suggested
the presence of catabolism to C-14-CO$_2$,
easily released from pancreas cells.
Therefore 1-C-11-Met accumulation reflects
mainly the protein synthesis. S-methyl-Met
showed also high potentiality as amino acid
metabolism marker especially if co-
administered with 1-C-11-Met.