

Fundamental and Clinical Studies on a SPAC  
T<sub>3</sub> Uptake Kit

Kazutami Torizumi\*, Harumi Nishibata,\*\*,  
Takao Mishima\* and Yoshinori Tuda\*

\* Department of Radiology Wakayama University,  
Wakayama,\*\* Laboratory for clinical Investiga-  
tion, Hidaka Hospital, Wakayama

Fundamental and clinical studies on SPAC T<sub>3</sub> Uptake  
Kit developed by the Mallinckrodt, Inc. were perfor-  
med to estimate clinical usefulness of this Kit.

Procedure; 1) Add 25μl of standard serum and 25 μl  
of patient serum to individually labeled antibody t-  
ubes. 2) Add 1ml of T<sub>3</sub> I-125 reaction solution to  
each antibody tube and swirl gently to mix. 3) Inc-  
ubate the antibody tubes for 30 to 60 minutes at 20  
°C to 26 °C. 4) Decant and blot lips of antibody t-  
ubes on paper-towell. 5) Perform counts on each anti-  
body tube 6) T<sub>3</sub> Uptake Index=(Net CPM Patient/Net  
CPM Standard) X normalizing Factor

Fundamental study;

T<sub>3</sub> Uptake Index was not affected by change of inc-  
ubation time from 20 min to 120 min, or by change  
of temperature at 24°C or 37°C. Coefficient of var-  
iation (C.V.) was 3.7%(within-assay) and 5.8%(betwe-  
en-assay) respectively. Coefficient of correlation  
between T<sub>3</sub> Uptake Kit and Res-0-Mat T<sub>3</sub> Kit was r=  
-0.96.

Clinical study;

T<sub>3</sub> Uptake Index values was 1.01±0.09(mean±standard  
deviation) in euthyroid subjects, 1.42±0.18 in hyp-  
erthyroidism and 0.82±0.12 in hypothyroidism.

RADIOIMMUNOASSAY OF SERUM THYROXINE USING ANTIBODY  
COATED TUBE

FUSAKO NAGAI and TOSHIKAZU SAITO

Division of Radioimmunoassay, Division of Endo-  
crinology and Metabolism, Jichi Medical School.

The clinical applicability of radioimmunoassay  
system for serum thyroxine (T<sub>4</sub>) using antibody  
coated tube, SPAC T<sub>4</sub>, was examined. In this assay  
25 ul of sample or standard solution was incubated  
in plastic tube coated with anti-T<sub>4</sub> antibody under  
the presence of <sup>125</sup>I-T<sub>4</sub>. The effect of incubation  
time on the binding rate of <sup>125</sup>I-T<sub>4</sub> to the tube  
indicated that the 60 minutes are required for the  
stable assay. The standard curve of this assay  
system revealed the sensitivity of 1.0 ug/dl at the  
B/B<sub>0</sub> of 90 %. The intra-assay error ranged from 2.0  
to 7.9 % (c.v.) and inter-assay error from 5.4 to  
12.4 % (c.v.), indicating the reasonable repeatabil-  
ity of assay value in this system. Correlation of  
the serum level of T<sub>4</sub> determined by SPAC T<sub>4</sub> and Res-  
o-Mat T<sub>4</sub> was quite close (r=0.911). The level of  
serum T<sub>4</sub> assayed by SPAC T<sub>4</sub> in normal, patients with  
simple diffuse goiter, hyperthyroidism, hypothyroid-  
ism, chronic thyroiditis and subacute thyroiditis  
agreed well with the T<sub>4</sub> level determined by other  
assay system. It is concluded that the T<sub>4</sub> RIA  
system using antibody coated tube is accurate,  
simple and rapid, indicating the usefulness in  
clinical use.