Studies on the Metabolism of the Thyroid Hormone by the Double Tracing Method (II)

Y. KUMAHARA and K. KIMURA

First Department of Medicine, Medical School, Osaka University, Osaka

In the previous report we demonstrated the method of synthesis of 3', 5'-131I-I-T4 by coupling DI T with DIHPPA Taurog's exchange labelling method of 3', 5'-125I-I-T4, and the technic of individual counting of 125I & 131I.

In the course of work, satisfactory results were not obtained with the method of Taurog, in which T4 sometimes decomposed and which was not so good yield.

The present report is referring to our improved labelling method of 3', 5'-125I-I-T4 and usefulness of 125I/131I ratio on the identification of partially deiodinated metabolites of T4.

1) Labelling method of 3', 5'-125I-I-T4.

In this procedure oxidated 125I2 in a small test tube by HCl and H2O2 is extracted with ethylether, which is then mixed with 50% ethanol solution of T4 (ph 5) and incubated for exchange reaction in room temperature.

Points of excellence of this method are follows. a) The fraction of radioactivity which is brought to the exchange reaction mixture is very large; in this method 90-95%, Taurog's method 30-35%. b) The decomposition of T4 does not occur. c) Very good yield; this method 70%, Taurog's method 25-30%. d) No particular apparatus is needed, etc.

2) Usage of 125I/131I ratio on the identification of T4 metabolites.

Paperchromatography and paperelectrophoresis are chiefly employed for the separation and identification of T4 metabolites. But in these experiments the identifications have been sometimes very difficult. The adoption of 125I/131I ratio made this much easier. This 125I/131I ratio made this much easier. This 125I/131I ratio is not the ratio of simple counts of 125I and 131 I but the ratio which is corrected by calculation as the ratio of initial mixture of both T4 equal 1.0. Accordingly 125I/131I ratio means the ratio of numbers of iodine atoms of 3', 5'-positions per those of 3,5-positions, Namely T4: 1.0, T3: 2.0, so on .

This 125I/131I ratio was applied to the identification of T4 metabolites in bile of rats which were injected both T4 mixture. On two-dimensional paperchromatogram the ratio of T4 and T3 spots confirmed by standard compounds were 0.98 and 0.54 respectively. The ratio of T4 spot was 1.07. These values agreed with the theoretical values.

Revaluation of Triiodothyronine Suppression Test

N. NIHEI, S. GOTO, S. HAYAMI and Y. ISHIZUKI

First Department of Internal Medicine, School of Medicine,
University of Nagoya, Nagoya

About 300 subjects with thyroid disorder have been examined T3 (triiodothyronine). There were some euthyroid patients whose suppression test in our clinic in these 6 years. 131I thyroidal uptake were not suppressed sufficiently after T3 100 ug per day for 6 days treatment or ot, so this report intended to ascertain of the period of T3 treatment when all euthyroid patients acquire the sufficient suppressibility.

Twenty-one nontoxic goitrous patients and 131I treated hyperthyroid patients were studied the change of the suppressibility in the