Evaluation of the Commercial T3 Radioimmunoassay Kits
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Determinations were made of total T3 concentrations in 18 sera of normal subjects by the four commercial kits (T3 RIA Kit, T3 RIA Mat, T3 RIA Pac and Seralute). T3 RIA Mat gave the lowest value (117±23 ng/100 ml), whereas the highest value was obtained by Seralute (184±34 ng/100 ml). T3 RIA Kit and T3 RIA Pac gave the mean value of 147±23 ng/100 ml and of 164±24 ng/100 ml, respectively. It was supposed that the discrepancies of normal T3 concentrations obtained by these kits resulted from the differences of T3 standards and from the methodologic differences of separation of B and F. The normal T3 concentrations were determined by T3 RIA Kit, in which the T3 standards accompanied in T3 RIA Mat were used, and the almost same values as those by the original T3 RIA Kit were obtained. Moreover, the diminished values were obtained, even if the T3 standards in T3 RIA Kit were used in T3 RIA Mat. Thus, the findings indicated that the discrepancy did not result from the differences of T3 standards in both kits. On the other hand, the diminished values were obtained by T3 RIA Kit, in which B and F were separated by resin strips accompanied in T3 RIA Mat. T3 RIA Mat gave the almost same values as those by T3 RIA Kit, when B and F were separated by charcoal method. Nonspecific bindings of 125I-T3 was almost 7% in both T3 free serum and sample serum in T3 RIA Kit, which used the charcoal method, whereas it was approximately 3% in T3 free serum and 9.7% in sample serum in T3 RIA Mat, in which B and F were separated by resin strip. Therefore, it was concluded that the differences between nonspecific binding in charcoal method and that in resin strip method caused the discrepancy of T3 concentrations in T3 RIA Kit and T3 RIA Mat.

Clinical Evaluation of In Vitro and In Vivo RI Tests for Thyroid Function
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For recent developments of RI tests of thyroid function, it is possible to determined T3-Resin Uptake, T3 concentration, T4 concentration, TSH levels and thyroid iodine uptake as the clinical routine tests.

In this studies, T3-Resin Uptake, T3 concentration, T4 concentration and TSH levels were measured by commercial kits in 350 samples, and comparison of thyroid hormone levels with thyroid iodine uptake were examined in 57 patients with thyroid disorders in order to evaluate its clinical usefulness.

Results: (1) Coefficient of correlation on T3-Resin Uptake and T3 concentration were r = +0.725. Normal T3 concentration but high T3-Resin Uptake was shown in 38/199 samples and low T3-Resin Uptake was shown in 24/199 samples. Low T3 concentration but high T3-Resin Uptake was observed in 18/58 samples and normal T3-Resin Uptake was observed in 28/58 samples. (2) Coefficient of correlation on T3-Resin Uptake and T4 concentration were r = +0.774. Normal T4 concentration but high T3-Resin Uptake was obtained in 58/195 samples and low T3-Resin Uptake obtained in 14/195 samples. Low T4 concentration but high T3-Resin Uptake was shown in 11/82 samples and normal T3-Resin Uptake was shown in 49/82 samples. (3) Coefficient of correlation on T3 and T3 concentration were r = +0.81. Normal T3 concentration but high T3 concentration was shown in 5/200 samples and low T4 concentration was shown in 46/200 samples.
Normal T₄ concentration but high T₃ concentration was observed in 19/188 samples and low T₃ concentration was observed in 20/188 samples. (4) Normal T₃-Resin Uptake but high TSH levels was obtained in 35/172 samples, normal T₃ concentration but high TSH levels was shown in 28/169 samples and normal T₄ concentration but high TSH levels was observed in 22/179 samples. (5) Good correlation was observed between thyroid iodine uptake and thyroid hormone levels as coefficient of correlation on thyroid iodine uptake and T₃-Resin Uptake were \( r = +0.66 \), and T₃ concentration were \( r = +0.83 \), and T₄ concentration were \( r = +0.79 \).

These results suggested that each RI tests for thyroid function was shown dynamic status of thyroid functions.

**Radioimmunoassay of Thyrotrpin as a Screening Test for Cretinism**

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Since 1974, we have screened for neonatal hypothyroidism using determination of TSH by means of double antibody radioimmunoassay. The mean ± standard deviation of values for TSH was \( 9.0 ± 11.3 \mu U/ml \) in 500 cord serum samples. Follow up studies in 8 subjects with high TSH levels (over 30 \( \mu U/ml \)) indicate that these may give false positive values.

A method for measuring TSH in eluates of dried blood samples on filter paper like those used for screening test for phenylketonuria was evaluated and improved. A linear relationship between the volume of eluate and the TSH value, and good recoveries of endogeneous TSH (104%) and added TSH (89%) were obtained, indicating that TSH in dried blood was extracted well by overnight elution and determined accurately by radioimmunoassay. Coefficient of variation was \( 3.4-20.7\% \). The TSH in dried blood samples on filter paper was stable at 4°C, 25°C or 37°C for 1 month. The TSH values of eluates were correlated with those of whole blood (\( r = 0.90 \)) and serum (0.81). Cases of primary hypothyroidism could be readily differentiated from normal subjects by this method even when eluates of their blood were combined with those of normal blood for assay of TSH. In a preliminary screening test on 15,000 randomly selected newborn infants, no cases of cretinism was found but 14 cases for “blind control” were consistently identified.

**Serum Thyroid Hormone Levels in Liver Diseases**

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In order to obtain the information regarding the role of the liver on the thyroidhormone metabolisms in man, T₃, T₄, TSH levels (radioimmunoassay, Riangnost) and total thyroxine binding capacity (TBC) were measured in sera obtained from patients with various hepatic diseases. The patients were all positive for intradermal test for schistosoma japonicum. Patients were classified according to the histology in the following groups, hepatitis (H), liver fibrosis (F), and liver cirrhosis (L). Serum albumin (g/dL as measured by immuno diffusion) was markedly reduced in L groups. H \( (n=23, 3.67 ± 1.14) \), F \( (n=14, 3.84 ± 1.11) \), L \( (n=15, 2.73 ± 0.74) \) Serum TBC (\%), T₃ (ng/ml),

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