

THYROID HORMONE MEASUREMENT BY SOLID PHASE METHOD  
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There are several methods for measurement of thyroid hormone by radioassay. Recently, assay performance of various methods have been simplified and improved. In the solid phase method (coated tube), anti-T3 serum or anti-T4 serum are immobilized onto the lower inner wall of test tube. The samples and standards are incubated for around 1 hour with (125) T4 tracer. Separation of the bound from free tracer fractions is accomplished by decanting and aspirating. And the tube is counted to quantitate the bound tracer. A standard curve is prepared and unknown values are obtained from it by interpolation. Centrifugation is not necessary; and the entire assay is performed in the same coated tube. Thus operation is extremely simple and best fit to full automatic system. Results: We made basic and clinical investigations on GammaCoat T3, T4 and T3 uptake and Spac T4 and T3 uptake. T4: The reproducibility of both GammaCoat and Spac are quite good. Incubation time of 30 to 60 min and incubation temperature are appropriate. Normal range is 4.5-12.0  $\mu\text{g}/\text{dl}$  which is almost same as that obtained by existing CPBA and various RIA methods. The correlation coefficient is very high of +0.97-+0.98. T3: Reproducibility of GammaCoat system is quite good. Incubation time of 60 min and incubation temperature of 37°C are appropriate. The normal value for T3 is 105 $\pm$ 27 $\mu\text{g}/\text{dl}$  which is rather low comparing with that obtained by existing RIA kit. Correlation with PEG method is extremely high of +0.98. T3 uptake: The reproducibility for both of GammaCoat and Spac are quite good. Incubation time of 60 min and incubation temperature of 23°C are both appropriate. T3 uptake value for Spac is 37.5 $\pm$ 4.7%; and that for GammaCoat is 36.4 $\pm$ 2.9%. Those are more than 5% higher than Triosorb value. The correlation coefficient of Spac with Triosorb is +0.87; and that of GammaCoat is +0.94. Summary: RIA solid phase method for T4, T3 and T3 uptake is extremely simple and suitable for full automatic system. Its assay results correlate with those obtained by existing assay system very well. Thus solid phase method will be used widely in the near future.

Measurement of thyroxine (T<sub>4</sub>) and T<sub>3</sub> uptake (T<sub>3</sub>RU) by Spac kit.

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Serum T<sub>4</sub> and T<sub>3</sub> RU levels in various thyroid diseases were measured by Spac T<sub>4</sub> RIA kit and Spac T<sub>3</sub> RU kit.

T<sub>4</sub> RIA Kit is based on a principle of solid phase RIA. Standard curves obtained were good for reproducibility. The lower limit of sensitivity was 2.0  $\mu\text{g}/\text{dl}$ . Dilution curve of high T<sub>4</sub> serum resulted in parallel to standard curve. The recovery added known amount of T<sub>4</sub> to various sera was approximately 100%. Intraassay reproducibility was 3.4%. Interassay variation was 5.8%. Serum T<sub>4</sub> levels were 8.0 $\pm$ 1.3  $\mu\text{g}/\text{dl}$  (M $\pm$ SD) in normal subjects, were 22.3 $\pm$ 6.3  $\mu\text{g}/\text{dl}$  in hypothyroid patients, were 3.4 $\pm$ 0.8  $\mu\text{g}/\text{dl}$  in hypothyroid patients. Correlation coefficient between values measured by this method and other method was 0.985. We compared serum T<sub>4</sub> levels with T<sub>3</sub>RU and T<sub>3</sub>, their correlation coefficients were 0.89, 0.87 respectively.

T<sub>3</sub> RU test indirectly measures the binding capacity of serum thyroxine binding globulin for radioactive labeled T<sub>3</sub>, using T<sub>3</sub> antibody covalently linked to defined of a tube. We examined the effect of incubation temperature, incubating at 4°C, 20°C, 37°C. The highest bound count was observed at 37°C. Intraassay reproducibility and interassay variation were satisfactory. T<sub>3</sub>RU levels were 0.94 $\pm$ 0.05 in normal subjects were high in hyperthyroid patients were low in hypothyroid patients.

From above data it was suggested that Spac T<sub>4</sub> RIA kit and T<sub>3</sub>RU kit render attractive for determination of T<sub>4</sub> and T<sub>3</sub> RU.