Estimations of Antibody for Thyroglobulin by Radioisotope Labeled Thyroglobulin and the Radioimmunoassay for Human Thyroglobulin (TG)

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In the patient’s serum with Hashimoto’s disease, the binding of $^{125}$I-TG was examined by cellulose acetate electrophoresis. 10–40% of radioactivity was observed in the gamma-globulin region in the patient’s serum having precipitating antibody for TG. In normal control serum there was faint radioactivity (less than 5%) in the gamma-globulin region.

In the patient’s serum, the binding of $^{125}$I-TG was also estimated by co-precipitation of the complex with Coomb’s serum. The binding radioactivity with high antibody for TG was inhibited in undiluted serum but increased in diluted serum. Maximal binding (20–40%) in the patient’s serum having precipitating antibody for TG was observed in 100,000 times dilution as a final concentration. Normal control serum showed usually less than 10% binding. It means that in the patient’s serum having high antibody for TG the precipitation reaction with $^{125}$I-TG is usually inhibited, if the test serum is not diluted appropriately. Therefore it is very important to examine antibody for TG in the condition of appropriate diluted serum for this method.

A specific radioimmunoassay for the measurement of TG in human serum has been developed. First incubation was 3 days and then the second antibody was added. The lowest sensitivity of the assay is 20 µg/ml. In normal subjects, no TG could be detected in 50%, other 50% showed between 20 and 270 ng/ml.

Sera having autoantibody for TG were interfere with the assay and TG concentration in such cases was often higher than 100 ng/ml. However, in the present experiment, it was still difficult to decide TG concentration in various thyroid diseases.