after the administration, the anticipation of the final results of ^{131}I treatment for hyperthyroidism is impossible. In cases of recurrence, T_3 values were found not so high and re-administration of ^{131}I is not always necessary.

Study on Determination of Free Thyroxine in Serum

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At present, we do think that the amount of ^{131}I to be given should be kept small and the continuous observation of the patients after the administration is necessary.

It has been generally accepted that free thyroxine in serum is responsible for a thyroid status in the subject. Recently Clark and Horn presented "free thyroxine" index, a facter proportional to the concentration of free thyroxine, and showed that values for this index were closely related to the thyroid status in various thyroid diseases. Our studies confirmed the results indicated previously, and showed that this index was still better than triosorb resin sponge uptake itself.

Further, it was studied to assess the level of free thyroxine by equilibrium dialysis using thyroxine ^{131}I. Tracer dosis of T_4 ^{131}I were added to serum, and incubated at 37°C for 1 hour. There ml. of undiluted serum, containing T_4 ^{131}I were dialyzed against 5—20 ml. of potassium phosphate buffer (p.H. 7.4, I = 0.15) at 37°C for 20—24 hours. Stable thyroxine was added to 3 ml. of dialysate, and was precipitated with 10% $MgCl_2$. Radioactivity of the precipitate was determined by a well-type scintillation counter. When 0.02% Merthiolate was added to the outside buffer, the level of free thyroxine was shown to augment with increasing amount of the outside buffer. The same results were obtained in the experiments using further purified thyroxine ^{131}I. However, when Merthiolate was absent in the buffer, the level of free thyroxine did not rise, but rather decreased with increasing amount of the outside buffer. Therefore, it was concluded that Merthiolate increased the level of free thyroxine. Moreover, it was shown that Krebs-Ringer solution diminished the effect of outside volume on the level of free thyroxine, and therefore, it was more suitable than potassium phosphate buffer. The values of normal serum ranged between 0.035 and 0.042.

A New Simple Method for the Determination of Thyroxine in Serum

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A new simple method to measure serum thyroxine (T_4) was introduced here by using the conventional resin sponge uptake of ^{131}I-triiodothyronine (T_3) (Triosorb test). Different from the conventional resin sponge uptake test, the present method can measure T_4 concentration in the serum, not disturbed by the amount of T_4 binding protein in the sample serum.

Four ml of 95% ethanol is added to 2 ml of the sample serum and is mixed well. After centrifuging, 4 ml of the ethanol supernatant is dried up in a test tube under nitrogen gas. Then, 1 ml of ^{131}I-T_3 in Tris buffer, and 0.5