

Comparative Studies of the Measurement Methods of Thyroxine in the Blood

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Measurement of thyroxine in the blood is evaluated to be very useful as one of function tests of the thyroid gland. This study is undertaken for comparison of the values obtained by 4 kits, Tetrasorb, Resomat-T₄, Thyopac-4 and Tetralute, that were sold commercially as a kit of thyroxine in the blood.

Method: Subjects consisted of in- and out-patients with euthyroid and various thyroid diseases in Municipal Okubo Hospital. The amount of thyroxine in the serum of about 150 cases was measured by each kit simultaneously, and the values were compared with those in the control serum, such as Monitrol I (8.6 μ gr/dl) and Monitrol II (16.4 μ gr/dl) measured at the same time. The serum of all samples measured by Tetrasorb, Thyopac-4 and Tetralute, was again measured by Resomat-T₄ for comparison, and the correlation between them was examined. The serum of 50 samples was measured by all different kits and the values obtained were compared.

Results:

1) T₄ value of normal persons was 9.5 ± 2.2 by Tetrasorb, 9.0 ± 2.0 by Resomat-T₄, 8.0 ± 2.2 by Thyopac-4 and 7.1 ± 1.9 by Tetralute. Generally, the value obtained by Tetrasorb

was somewhat higher, that by Resomat-T₄ was the next, and that by Thyopac-4 and especially by Tetralute tended to be a little lower. In the cases with hyperthyroidism, however, Tetrasorb showed a little higher value, but other three kits showed almost same value. While, in the cases with hypothyroidism, the values by Thyopac-4 and Tetralute were lower than those by other two kits.

- 2) In the measurement of the Monitrol I serum, almost same value was obtained by Tetrasorb, Resomat-T₄ and Thyopac-4, but a little lower value was shown by Tetralute. There was no significant difference between the values of the Monitrol II serum measured by the four kits.
- 3) The value of the serum of 50 cases measured by all the kits was almost same, when measured by Tetrasorb (8.6 ± 4.2) and Resomat-T₄ (8.5 ± 4.2). However, it was 7.5 ± 4.9 by Thyopac-4 and 6.8 ± 4.7 by Tetralute, and these two kits tended to show lower value than the above two.

Significant correlation was found between the results of each kit with the correlation rate of 0.93 to 0.97.