nation of TSH.

(THEORY)

As a calculation formula, the following one (1) is employed.

$$y=\frac{a}{x-c}-b \quad \cdots\cdots\cdots(1)$$

y: Concentration of TSH $\quad x=B/B_0$

The parameters (a, b, c) of the formula (1) are calculated according to the following simultaneous equations.

$$\begin{cases} 1.25=\dfrac{a}{x_1-c}-b \\ 20.0=\dfrac{a}{x_2-c}-b \\ 320=\dfrac{a}{x_3-c}-b \end{cases}$$

x_1, x_2, x_3; $B/B_0\%$ in each of the following concentrations (1.25, 20, 320 μu/ml) When the parameters (a, b, c) are calculated, the concentration of TSH can be determined according to the formula (1).

(RESULTS)

(I) The correlation coefficient between the reformed assay system and the current method of Competitive Radioassay.

r=0.999 $\quad y=1.03x-1.4$

(II) The interassay variations

n=10 $\bar{x}$=7.47 SD=0.95 CV=12.8%

n=10 $\bar{x}$=50.8 SD=3.98 CV=7.8%

n=10 $\bar{x}$=129.5 SD=7.81 CV= 6.0%

(III) Advantages of the reformed assay system over the current method.

1) No necessity to draw the standard curve.

2) Simplicity in handling an electronic calculator and in dilution techniques of standard.

3) This method requires only 14 test tubes for the standard, while the current method does as many as 20 test tubes.

4) This method is less steps in calculator program than the other methods.

Theoretical Analysis and Data Processing of Competitive Radioassay

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In this report, a theoretical analysis of Radioimmunoassay among a variety of Competitive Radioassay is done.

This work is based on the assumption that the Antigen-Antibody Reaction is irreversible and the reaction is completed and the antigen is excessive over the antibody at the time of the completion of the reaction.

$(x=B/T)$	$(x=B/B_0)$	$(x=F/T)$
$y=\dfrac{A}{x}-b$	$y=\dfrac{b}{x}-b$	$y=\dfrac{-A}{x}-b$

y: Antigen in serum $\quad b$: Labeled Antigen

A: Antibody

The correction of these formulas above described results in the following formula (1).

$$y=\frac{a}{x-c}-b \quad \cdots\cdots\cdots(1)$$

The parameters (a, b, c) of the formula (1) can be calculated by the following simultaneous equations.

$$\begin{cases} y_1=\dfrac{a}{x_1-c}-b \\ y_2=\dfrac{a}{x_2-c}-b \\ y_3=\dfrac{a}{x_3-c}-b \end{cases}$$

Consequently, the quantity of antigen in the sample serum (y) can be calculated by the formula (1).