

RADIOIMMUNOASSAY OF THYROXINE-BINDING
GLOBULIN

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A radioimmunoassay kit for thyroxine-binding globulin (TBG) (RIA-Gnost TBG) has recently been developed and provided by the HPRL/Behring Institute. Fundamental evaluation of the kit and clinical investigation using this kit were performed. The standard curve covers the range 0-48 $\mu\text{g/ml}$. The coefficients of variation for intraassay were 2.8-3.9% and those for interassay were 4.0-9.3%, respectively. Dilution tests of high TBG sera were satisfactory. Serum TBG concentration in 67 normal subjects over 18 years was $22.4 \pm 4.1 \mu\text{g/ml}$ (mean \pm SD). Pregnant women had a mean value of $50.6 \pm 7.3 \mu\text{g/ml}$ ($n=7$), and hypothyroid patients a mean value of $26.5 \pm 5.3 \mu\text{g/ml}$ ($n=18$), both being significantly higher than normal ($p < 0.001$). Hyperthyroid patients, on the other hand, had a mean value of $18.6 \pm 3.7 \mu\text{g/ml}$ ($n=28$), which was significantly lower than normal ($p < 0.001$). TBG concentrations in 5 sera from patients with TBG deficiency ranged 0-8.7 $\mu\text{g/ml}$. Patients with liver cirrhosis and with acute hepatitis had mean values of 16.6 ± 5.9 and $31.4 \pm 3.6 \mu\text{g/ml}$, respectively. T_4 :TBG ratio (T_4 , $\mu\text{g}/100\text{ml} \times 10$: TBG, $\mu\text{g/ml}$) in normal subjects ranged from 2.8 to 5.0. All of the 28 hyperthyroid patients had values greater than 5.0. Seventeen out of the 18 hypothyroid patients had values less than 2.8, while another one patient had a value of 3.1. Pregnant women had slightly low values for T_4 /TBG (2.5-3.4). T_4 /TBG ratio correlated well with free thyroxine index (Spac $T_4 \times \text{Spac } T_3$) in 76 sera from normal subjects, pregnant women and patients with hyperthyroidism, hypothyroidism and liver disease ($r=0.928$). Measurement of TBG concentration by radioimmunoassay is useful, especially when hyperthyroidism is complicated with pregnancy, liver disease or other TBG abnormalities.

EVALUATION OF THREE DIFFERENT TYPES OF RADIOASSAY
KITS FOR MEASUREMENT OF SERUM THYROTROPIN LEVELS
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The purpose of study is to evaluate and compare with accuracies of radioassay Kits for thyrotropin in human serum. Levels of thyrotropin were measured on sera of patients with hyper-, eu- and hypothyroid by three kinds of assay Kits commercially available, which were made of double antibody technique (D.A.) polyethylene glycol method (P.G.) and sephadex solid-phase method (S.S.) respectively. The chemical procedures followed an original instruction described on the kit. The results of each radioassay showed well coefficient of variation (C.V.) and recovery rate as indicated:

method	mean C.V. (%)		Recovery rate(%)
	intraassay	interassay	mean \pm S.D.
D.A.	14.3%	20.8%	101.7 \pm 12.9
P.G.	10.0	23.6	114.8 \pm 13.1
S.S.	11.3	18.0	102.9 \pm 17.3

The dilution tests of three methods showed a well linear-equation until 8 to times dilution were given. The thyrotropin values ($\mu\text{U/ml}$) also correlated well with clinical state of patient as shown:

Method	Hyperthyroid	Euthyroid	Hypothyroid
D.A.	2.1 \pm 1.1	3.5 \pm 1.9	27.3 \pm 13.2
P.G.	1.7 \pm 1.9	1.8 \pm 1.4	13.2 \pm 7.8
S.S.	3.9 \pm 1.2	3.3 \pm 1.4	23.4