

normal, 3.46 ± 1.25 for hyperthyroid, 0.16 ± 0.13 for hypothyroid, and 0.95 ± 0.29 for pregnant. Relation between FT4I and free T4 was sig-

nificant ($r = +0.88$), and, in addition, was almost linear as expressed by a regression equation of $Y = 2.80X + 0.02$.

RI in Vitro Test for Thyroid Hormone

Comparison of methods and in vitro effects of various drugs

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In vitro effects of various drugs on direct saturation analysis and competitive protein binding analysis for T_4 were studied. Normal human serum was mixed with diphenylhydantoin (DPH) to give final concentrations of 10, 50 and 500 $\mu\text{g/ml}$, with salicylate (0.04, 0.4, 4 mg/ml), with phenobarbital (0.01, 0.1, 1 mg/ml), with barbital sodium (0.01, 0.1, 1 mg/ml) and with benzbromarone (1, 10, 100 $\mu\text{g/ml}$).

The serum mixed with an equivalent amount of solvent for these drugs was used as control. Direct saturation analysis was performed by Kits of Triosorb test, Res-O-Mat T_3 , Thyopac-3 Charcoat T-3 and Trilute. Addition of DPH (500 $\mu\text{g/ml}$), salicylate (4 mg/ml) and benzbromarone (100 $\mu\text{g/ml}$) resulted in abnormal values

which were the same levels as hyperthyroidism. However, these drugs at the concentration of 1/10 of these doses showed less effects within normal limits. Barbital and phenobarbital had no or little effects. Effects of these drugs on competitive protein binding analysis for T_4 were studied using Res-O-Mat T_4 and Tetralute Kits.

In vitro addition of DPH, salicylate and phenobarbital either to serum or to TBG solution showed no effect on T_4 determination. On the other hand, benzbromarone at the high concentration (100 $\mu\text{g/ml}$) caused increased value. It is unlikely that pharmacological doses of these drugs had direct effects on direct saturation analysis and competitive protein binding analysis for T_4 .

Studies on the Method for Determining Free Thyroxine Concentration in Diluted Serum

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A method for determining "free" thyroxine concentration in diluted serum was presented and compared with the original undiluted method.

The technique was entirely in accordance with the original magnesium precipitation method by Sterling et al except that firstly serum was diluted