D3. Measurement D (In Vitro Assay, Thyroid and Parathyroid Hormone)

Radioimmunoassay of Thyrotropin Releasing Hormone (TRH) in Human Serum

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Radioimmunoassay of TRH in human serum has been developed. To prevent of inactivation of TRH immunoreactivity by serum, mixture of 8-Hydroxyquinoline and Tween 20 has been used. For extraction of TRH from serum methanol was used. Around 75% of TRH was extracted from one ml of serum by over 4.5 ml of methanol. In this assay system lowest sensitivity was calculated as 5.0 pg/ml. Dilution curve of high TRH serum after synthetic TRH i.v. administration was parallel to standard curve. Recovery experiment revealed 100%.

TRH levels in serum were under sensitivity to 70 pg/ml in normal subjects, were under sensitivity in all hyperthyroid patients, were 40 to 600 pg/ml in primary hypothyroid patients, were 100 to 800 pg/ml in secondary hypothyroid patients and were under sensitivity in all tertiary hypothyroid patients.

In hyperthyroid patients TRH levels in serum during antithyroid drug treatment increased 5.0 pg/ml or more in most cases, but remained under sensitivity in a few cases during observation period.

In primary hypothyroid patients TRH levels in serum during T4 treatment gradually decreased to normal range.

From above data it was suggested that measurement of TRH in serum might be useful tool to study the role of hypothalamo-pituitary -thyroid axis in clinical basis.

Studies on Radioreceptor Assay (RRA) of TSH

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The RRA of TSH is considered to be useful not only in evaluating TSH activity, but also in quantitating and analyzing the mechanism of the action of other abnormal thyroid stimulators, such as LATS and LATS-Protector, which are present in sera of patients with Graves’ disease.

The thyroid gland surgically obtained from patients with Graves’ dis. was homogenized and 10,000 x g fraction was used as the receptor. Human TSH was iodinated by using lactoperoxidase and