

serum in vitro was  $99.6 \pm 9.5\%$ . Multiple doses of the purified or crude HTSH, and dilutions of the hypothyroid serum resulted in parallel curves to that obtained for the HTSH-R-STD-A. Serum TSH concentration ranged  $<1.0-2.5 \mu\text{U/ml}$  in normal subjects and pregnant women;  $2.5-7.5 \mu\text{U/ml}$  in patients with simple goiter;  $2.5-20 \mu\text{U/ml}$  in patients with Hashimoto's thyroiditis in euthyroid state;  $22-800 \mu\text{U/ml}$  in primary hypothyroid

patients;  $200-700 \mu\text{U/ml}$  in cases of cretinism; and undetectable in untreated patients with Graves' disease, and cases of panhypopituitarism. There were in good agreements between immunological and biological potencies of HTSH which were determined by radioimmunoassay and McKenzie's bioassay in sera from hypothyroid patients and pituitary preparations.

### Studies of radioimmunoassay of Arginine Vasopressin (AVP)

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The studies on the radioimmunoassay of arginine vasopressin and comparison to bioassay were performed as follows.

Synthetic lysine vasopressin (LVP) was coupled to bovine serum albumin by ethyl CDI after the method of Permutt et al. The complex was emulsified in normal saline and complete Freund's adjuvant and injected into the foot pad or subcutaneous tissue of rabbits, 3 or 5 times at two weeks interval. The I-125 labelled LVP was prepared by the method of Hunter and Greenwood at Dainabotts Laboratory and its specific activity was from 100 to 200 mCi/mg.

The standard curves for LVP and arginine vasopressin (AVP) were made by two antibody assay system using anti-rabbit  $\gamma$ -globulin goat serum, in the range from  $5 \mu\text{U}$  to  $3000 \mu\text{U}$  and

from  $10 \mu\text{U}$  to  $5000 \mu\text{U}$  respectively. On the other hand oxytocin showed competitive binding affinity to the antibody at the rate less than 0.1% of LVP.

The radioimmunoassay of AVP in tumor and neurohypophyseal tissues were performed in a case of bronchogenic carcinoma of oat cell type that caused syndrome of inappropriate secretion of ADH. The dose response curve of the tissue extracts showed good correspondence with the standard curve. The concentrations of AVP in the tissues measured by this standard curve of radioimmunoassay were  $138 \mu\text{U/mg}$  in tumor and  $138 \text{ mU/mg}$  in neurohypophyseal tissue, while the values measured by bioassay using water loaded and alcohol anesthetized rats were  $41.5 \mu\text{U/mg}$  and  $98.5 \text{ mU/mg}$  respectively.