

## Symposium III.

### Recent Trend in In Vitro Test

#### Radioimmunoassay of Steroid Hormones

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Radioimmunoassay of steroid hormones and its clinical applications were discussed.

1. 21-succinates and 3-(O-carboxymethyl) oximes of cortisol and deoxycortisol were synthesized and coupled with human  $\gamma$ -globulin. They were injected to rabbits at an interval of 2 weeks. The specificity of 3-oxime antibodies was about the same to that of 21-succinate antibodies both in cortisol and deoxycortisol.
2. Cortisol-21-succinate, testosterone-3-oxime and aldosterone-3-oxime were coupled with tyrosine methyl ester by a mixed anhydride method. Iodination of these derivatives were performed by a chloramine T method. A Sephadex G-25 column was used for further purification. The assay sensitivity using iodinated steroid hormones as antigen was as good as that using tritiated steroid hormones.
3. Simple and rapid methods were developed for extraction and purification of plasma aldosterone and testosterone without any chromatography.
4. A simultaneous isolation of several plasma steroids were performed on a Sephadex LH-20 column eluted with organic solvents or water.
5. The mean plasma cortisol level at 9 a.m. were 14.6 with a range of 6 to 25  $\gamma$ /dl in 30 normal subjects. The mean urinary free cortisol in 24 hours was 55.6 with a range of 26.4 to 97.7  $\mu$ g in 16 normals.
6. A radioimmunoassay of plasma deoxycortisol was useful in an application to a rapid Metopirone test in which single dose of 1.5 gm of Metopirone was administered orally at 9 a.m.
7. Plasma progesterone levels were suppressed by dexamethasone and were stimulated by ACTH-Z.
8. The mean plasma aldosterone level measured by radioimmunoassay without chromatography was 10.7 with a range of 6.8 to 13.6 ng/dl in normal subjects.
9. Plasma DOC levels were elevated in most patients with Cushing's syndrome and primary aldosteronism. It was definitely high in a case of adrenal 17 $\alpha$ -OH lase deficiency.
10. Plasma DHEA-SO<sub>4</sub> levels were low in patients with Cushing's syndrome due to adrenal adenoma, 17 $\alpha$ -OH lase deficiency, panhypopituitarism and Addison's disease. It was remarkably high in patients with adrenal 21-OH lase deficiency.
11. Plasma testosterone levels were definitely low in male patients with hypogonadism.