Radioimmunoassay of Steroid Hormones

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Recently radiostereoassay (Murphy 1968) has been developed as the ultramicro-determination method (pg-ng) of steroid hormones in plasma and other body fluids in North America and Canada and has received widespread acceptance as routine clinical procedures.

Radiostereoassay method (Murphy 1968) can be classified into two: (1) competitive protein-binding analysis (Murphy 1963), using plasma and organ specific binding proteins as the specific binding reagents, and (2) radioimmunoassay (RIA) ,using steroid hormones as hapen. Steroid antibody has been obtained using steroids-BSA conjugates (Erlanger & Liebermann 1957) as antigen.

Radioimmunoassay methods for the measurement of plasma estradiol (Abraham 1969) testosterone (Nugent et al 1970), and aldosterone (Nugent et al 1970) have been reported by this time.

We have established a radioimmunoassay for the ultramicrodetermination of plasma adrenal androgen-dehydroepiandrosterone sulfate (DHEA sulfate). The DHEA-17-oxime was coupled to bovine serum albumin, and the conjugate was used to obtain high-titer anti-DHEA rabbit serum.

We wish to report the details of practical procedure and application of this radioimmunoassay for the microdetermination of plasma DHEA sulfate and detailed results of investigation of radioimmunoassay for plasma aldosterone using antiserum of aldosterone which was kindly distributed by Dr. Nugent.

The Use of Radioimmunoassay of α-Fetoprotein for the Diagnosis of Hepatoma

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The usefulness of α-fetoprotein (α_f) concentration detectable is about 10 μg/ml.

By the Ouchterlony technique we could detect α_f in the sera of 52 out of 74 hepatoma patients. The serum levels in the patients determined by the single radial immunodiffusion method showed a very wide distribution, that is, 3,750-10 μg/ml. With the more sensitive technique such as radioimmunoassay, the higher positivity of α-fetoprotein, and the more definite diagnosis in the earlier stage of the disease may be expected.

Radioiodination of α-Fetoprotein: α-fetoprotein was isolated from antigen-antibody complex by gel filtration in low pH. The labeling of the purified preparation with ^{125}I was carried out by the Chloramine T method of Hunter and Greenwood. The iodinated α_f was separated from free radioiodnie by gel filtration. The specific activity of the preparation was 16.6 μCi/μg.

Antisera: The radioimmunoassay was carried out by double antibody technique using anti α_f rabbit serum prepared by immunizing rabbits with the pure α_f and anti rabbit