

cer was not so large as expected. The scintigram of the prostate gland was not depicted.

Currently, estrogen therapy for carcinoma

of the prostate has been subjected to wide discussion and to reconsideration. Further studies on this problem are now under way.

Autoradiographic Study on the Distribution in Mouse Tissues by ^3H -Prednisolone

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The distribution and excretion of ^3H -prednisolone in mouse tissues were investigated by micro-autoradiography.

The tritiated prednisolone ($15 \mu\text{Ci/g}$; body weight) was administered intraperitoneally. The animals were sacrificed after injection with lapse of time. The autoradiographs were made by stripping method as paraffin sections. Soluble isotope of the preparates was as well as possible washed away with water. The back ground and the "diffusion phenomenon" of isotope were few seen.

The incorporation of ^3H -prednisolone was most prominent in the liver and the kidney. The silver grains were found also in the gastrointestinal tract. These organs seem to be play a role of metabolic pathway of prednisolone.

The silver grain count in the liver parenchym was eighteen in number as average, but in the Kupffer's cells and in the connective

tisslue was a few.

In the kidney the silver grains of ^3H -prednisolone were frequently found in the epithelium of renal proximal tubuli, but rarely found in the glomeruli and the connective tissue.

The label in the stomach was fairly found in the muscle layer and the submucosa, but a few in the gastric glandular cells. The incorporation in the gastric gland was mainly seen in the parietal cells.

In the small intestine the silver grains were found in the villi cells and the submucosa.

The pancreas, the heart, the lungs and the spleen have a few numbers of silver grains in this experiment.

It is probable that the silver grains mean the label which resulted from the administration of ^3H -prednisolone. But it is impossible that these indicate always ^3H -prednisolone itself.

Micro Determination of Plasma Corticosteroids by Competitive Protein-Binding Radioassay

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A simple sensitive method of estimating cortisol and corticosterone in plasma has been reported, utilizing the steroid-binding properties of plasma. The addition of increasing amounts of unlabeled cortisol or corticosterone

to an equilibrium system containing standard plasma and a constant amount of ^3H -corticosterone caused a proportional decrease in the percentage of ^3H -corticosterone bound to the plasma protein.

Corticosteroid was extracted twice with 1.5 ml of ethylene dichloride from 0.05 ml plasma. The supernatant was transferred to a small test tube, and evaporated to dryness. Bush B₅ system was used for separation, if necessary. Corticosteroid-binding globulin (CBG)-isotope solution was made up from 2 ml plasma of Addison's disease administered dexamethasone, 0.2 ml of ³H-corticosterone (10 μ Ci/ml) in ethanol and distilled water to 100 ml. One ml of CBG-isotope solution was added to each small test tube containing the corticosteroid sample from plasma or standard corticosteroid. Each test tube was then shaken well, warmed 45°C for 5 minutes followed by cooling at 5°C for 10 minutes. Forty mg of Florisil (measured with small spoon) was added to each test tube, which was then shaken for 2 minutes and returned to ice water bath. A half ml of supernatant was pipetted into 10 ml Bray's solution and counted in a liquid scintillation counter. The radioactivity was compared with that obtained by standard cortisol or corticosterone.

Various adsorbent materials including dextran-coated charcoal, Florisil and Fuller's earth were studied for the separation of the protein-bound from the unbound fraction. Florisil gave the most generally useful method of separation. When Florisil was used, 30 to 80 mg was found to be suitable for separating protein-bound and unbound ³H-corticosterone, but very little ³H-cortisol was taken up even

by amounts as great as 100 mg Florisil. Since corticosterone and cortisol were bound almost equally and interchangeably by human CBG, no difference in results was found for separating the protein-bound and unbound fractions. The useful range for a particular assay depended on the concentration of CBG present, greater sensitivity being obtained with less CBG. However, the sensitivity was limited principally by the specific activity of the isotope. With greater specific activity it was found possible to dilute the standard plasma. Recoveries of known amounts of unlabeled cortisol added to plasma of a patient with Addison's disease was almost 100%. Comparison of results obtained using this method and fluorometry showed a good correlation. Plasma cortisol levels in healthy individuals ranged from 6.0 to 20.0 μ g/dl when determined at 8:30 to 10:30 AM, with a mean of 13.7 μ g/dl in 18 subjects. The mean level of plasma corticosterone in eight normal rats was 14.8 μ g/dl.

Unlike other methods, the sensitivity was greater in the lower range with a standard deviation of $\pm 1 \mu$ g and the method was highly specific for cortisol and corticosterone in human plasma and was affected neither by hemolysis nor by substances which interfered with other methods. The chief advantage of using this method in place of other methods has been the much shorter time required to obtain the results.

Progesterone Metabolism in Various Diseases

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Peripheral metabolism of exogenous progesterone was studied in patients with hepatic diseases, renal diseases and adrenocortical dysfunction. Twenty-four hour urine was collected from each patient after the intravenous administration of approximately 2.5 μ Ci of ¹⁴C-progesterone. An aliquot of the urine was extracted by ethyl acetate and separated into 17-KS and 17-DOHCS by thin layer chromatography. Pd and Pt fractions were further

purified by aluminum column.

The radioactivity of the each fraction was counted by liquid scintillation counter. The results obtained suggested that the most part of administered progesterone was degraded in the liver and excreted in urine as pregnanediol. It was also suggested that the small part of the exogenous progesterone was converted to 17-OH-progesterone and excreted in the urine as pregnanetriol and another part