

Measurement of Plasma Renin Activity by Radioimmunoassay of Angiotensin I

H. TAGAWA, E. MAEHATA and M. KITAMURA

RI Center, Central Clinical Laboratories, Department of Medicine,

M. ISHII, T. IKEDA and Y. KANEKO

Second Department of Medicine, University of Tokyo, Tokyo

Haber's radioimmunoassay method of plasma renin activity (PRA) was modified, and more sensitive and reliable method was developed. Converting enzyme of angiotensin I (AT I) was blocked by adjusting pH to 5.5 and adding DFP, instead of using 8-hydroxyquinoline and BAL.

Method: Blood was taken at 9 am after recumbency for more than 30 minutes, and plasma obtained was frozen. After thawing, plasma was divided into two aliquots of 1 ml, pH was adjusted to 5.5 with HCl and acetate buffer, and DFP was added. One tube was incubated at 37°C for 3 hrs, and another was kept at 0°C. Twenty μ l of the treated sample was added to the mixture of tris acetate buffer (pH=7.4), 125 I-AT I and AT I antiserum, and was kept overnight at 4°C. Dextran-coated charcoal was used for separation of B & F, and their AT I equivalent was calculated by the reference curve of standard AT I. PRA was expressed by AT I of the incubated plasma minus AT I of the unincubated one.

Results: (1) AT I was produced in proportion

to the incubation time within 3 hrs. (2) Reproducibility was fair; coefficients of variance of the same samples were 9–15%. PRA was reproducible within 30 days of taking blood. Addition of AT I to samples gave satisfactory recoveries. (3) Correlation coefficient of PRA by the present method and by the bioassay method reported previously was 0.89 ($p < 0.001$). (4) PRA is dependent on sodium intake. However, when urinary sodium excretion was above 40–50 mEq per day, PRA was relatively unrelated to sodium excretion, averaging 1.10 ng/ml/hr (SD=0.64). The value was similar to Haber's. PRA was doubly increased by IV injection of 20 mg of furosemide or keeping upright posture for an hour.

Summary: The modified technique of Haber's radioimmunoassay of PRA was presented, and was proved to be reliable and useful procedure for the clinical examination (125 I-AT I and antiserum were kindly supplied by Dainabot RI Laboratories.)

Studies on Radioimmunoassay of Plasma Renin Activity

M. UEDA, T. YATABE, H. YAMADA and M. IIO

*Department of Nuclear Medicine and Radiological Science, Tokyo Metropolitan
Geriatrics Hospital, Tokyo*

According to the development of radioimmunoassay of plasma renin activity (PRA), phy-

siology of renin-angiotensin-aldosterone system and roles of renin in hypertension have exten-