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FUNDAMENTAL AND CLINICAL EVALUATION OF PROLACTIN RADIOIMMUNOASSAY WITH SECOND ANTIBODY-COATED BEAD TECHNIQUE. S.Satake, A.Nishikawa, Y.Fujita, K.Hyodo, M.Hara, T.Morita, M.Fukuchi and K.Nagai. Division of Nuclear Medicine, Hyogo College of Medicine. Nishinomiya.

Fundamental and clinical evaluation of second antibody-coated bead technique was performed for measurement of serum prolactin by radioimmunoassay system. First and second incubations were one and two hours at 20-30°C, respectively. The criteria for intraassay and interassay reproducibility, recovery tests, dilution tests and specificity in the assay system were satisfied. The assay results of clinical applications was as follows; 14.2 ± 6.9 ng/ml in normal subjects (n=51), 196 ± 92.2 ng/ml in pregnant women (n=9), 96.5 ± 75.5 ng/ml in patients of amenorrhea with galactorrhea (n=4), 16.6 ± 6.5 ng/ml in amenorrhea without galactorrhea (n=10), 12.5 ± 6.2 ng/ml in hyperthyroidism (n=4), 25.8 ± 23.8 ng/ml in primary hypothyroidism (n=4), 17.1 ng/ml in a dwarfism (n=1), 28.2 ± 11.5 ng/ml in breast cancer (n=6), 3652 ± 9562 ng/ml in pituitary adenoma (n=8) and not detectable in hypopituitarism (n=2). A good correlation coefficient was obtained between assay results of these method and those of another kit which supplied commercially such as  $r=+0.997$ ,  $y=0.94x + 0.49$  (n=82). The studies in this series suggested that this rapid and simple system is well designed ones for clinical applications.

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DEVELOPMENT OF PLASMA RENIN ACTIVITY MICRO METHOD. H.Honma and M. Aoyama. Research Division, Special Reference Laboratory Inc. Tokyo.

Recently, the measurement of plasma renin activity (PRA) plays an important role for a diagnosis of hypertension and the inspection is generalized. We developed the measurement of PRA with an extremely small amount of sample (0.025 ml). Characterization of this measurement system was the direct assay without excluding proteins, and B/F separation was used by centrifuged at 3,000 rpm for 15 min with final 12.5% polyethyleneglycol concentration. Simultaneous reproducibility in our method was 3.0-5.5%. Reproducibility in different days was 2.8-14.4%. Recovery rate was achieved to 97.9% and minimum detectable dose calculated from 95.0% intercept value was 2 ng/ml. As compared with Dainabot PRA kit, a coefficient of correlation was 0.997 (n=44). As mentioned above, this measurement of PRA showed good results and this method is thought a simple method measuring PRA with an extremely small amount of sample.

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FUNDAMENTAL STUDIES OF RIA KIT FOR ANTI RUBELLA.

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The basic study on the rubella IgG antibody RIA kit was carried out and following conclusions were obtained.

- 1) The satisfactory results were obtained in the first incubation for 1-5 hours at 45 °C and the second incubation for 1.5-4 hours at 45 °C.
- 2) The within assay variation ranged from 6.4 to 11.4 percent (C.V.).
- 3) The between variation ranged from 20.2 to 30.5 percent (C.V.).
- 4) The dilution curve was hyperbola.
- 5) The coefficient of correlation (r) between RIA and HI (hemagglutination-inhibition) was 0.341 (p 0.05, n=302).
- 6) Ten point two percent of the specimens were found negative by HI and positive by RIA, and 11.8 percent of the specimens were found negative by RIA and positive by HI.

From the study described above, it is shown that the rubella IgG antibody RIA kit seems to be suitable for the routine test in the laboratory.

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RADIOIMMUNOASSAY OF COTININE: URINARY COTININE EXCRETION IN HABITUAL SMOKERS.

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To investigate effects of the number of cigarettes and the mode of smoking on nicotine intake, urinary cotinine, expressed  $\mu\text{g}$  per mg creatinine (Cr), were measured in 392 habitual smokers and 486 non-smokers by a radioimmunoassay (Matsukura et al. Clin. Pharmacol. Therap. 25:555, 1979). The mean urinary cotinine level of the smokers was  $9.73 \pm 1.21$  (mean  $\pm$  SEM)  $\mu\text{g}/\text{mg}$  Cr, significantly higher than that of the non-smokers,  $0.69 \pm 0.08$   $\mu\text{g}/\text{mg}$  Cr (P < 0.001). The urinary cotinine values in smokers increased with their number of daily cigarettes consumed in a dose-related manner;  $5.26 \pm 1.06$   $\mu\text{g}/\text{mg}$  Cr for 1-9 cigarettes (cgts)/day-smokers (N=37),  $7.49 \pm 0.85$ , for 10-19 cgts/day-smokers (N=97),  $8.65 \pm 0.53$ , for 20-29 cgts/day-smokers (N=142),  $9.23 \pm 0.62$ , for 30-39 cgts/day-smokers (N=70), and  $10.80 \pm 1.18$ , for 40 or more cgts/day-smokers (N=45). Moreover, the urinary cotinine levels tended to be higher in the smokers who inhaled, discarded shorter butts, and smoked a high-nicotine brand, than those who puffed, left longer butts, and smoked a low-nicotine cigarette, respectively. These results indicate that urinary cotinine is a good marker for smoking because it well reflect both the amount and the mode in smokers.