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BASIC INVESTIGATION OF RADIOIMMUNOASSAY KIT FOR MEASUREMENT OF SERUM OSTEOCALCIN (BGP). M.Takahashi, H.Nose, Y.Kazahaya, K.Izaka and E.Hasegawa. R&D, Radioisotope Division, The Green Cross Corporation, Chiba

Osteocalcin is noncollagenous protein of bone, and has attract the attention for marker of bone turnover. The measurement of serum osteocalcin established by Price et al. This time, we got Osteocalcin RIA kit that CIS developed, and investigated fundamental tests. This kit is RIA kit based on double antibody method and consists of I-125 osteocalcin, antibody, standards, 2nd antibody(PR Reagent) and control serum.

Result of incubation test, it got to plateau about 16 hours for first incubation, 5 minutes for second incubation at 2-8°C. Coefficient of variation for intra and inter-assay were 1.2 - 3.2 % and 1.6 - 3.5 % on standards, and 3.4 - 4.7 % and 2.1 - 3.8 % on three kinds of control serum. We obtained satisfactory results on recovery test and dilution test.

Sufficient results were obtained in basic investigation of this kit, so this kit can be useful for clinical investigation in the future.

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HIGH SENSITIVE RADIOIMMUNOASSAY FOR PARATHYROID HORMONE
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The measurement of serum PTH has proven to be very important in the differential diagnosis of disorders of calcium metabolism. However, the existing hPTH kits which are commercially available are not satisfactory in regard to sensitivity and specificity. We developed high sensitive PTH RIA kit "YAMASA", using the PTH antiserum prepared by Slatopolsky et. al.

This RIA kit is based on a double antibody method and is composed of [¹²⁵I]Tyr⁴²PTH(43-68), anti-bovine PTH(1-84) chicken antiserum as first antibody, PTH standard solutions and anti-chicken IgG goat antiserum as second antibody without pretreatment. The sample volume required is 200 μ l, and the whole assay time is within 24 hours. The sensitivity of the assay was 100pg/ml, and up to 3200pg/ml linear standard curve were obtained. The coefficients of the variation for the within-assay, between-assays and between-lots were 2.8-4.6%, 2.2-7.3% and 6.8-8.6% respectively. Both the recovery study and the dilution test also showed good results. The cross reactivity test using various PTH fragments showed that the mid-region of PTH is recognized in this kit, whereas C-terminal and N-terminal regions are not.

On clinical studies by this kit, the normal value of serum PTH were 301 \pm 90pg/ml, and all of the normal subjects, tested were detectable. The serum PTH values for patients with hypoparathyroidism were 82 \pm 56pg/ml. Those for patients with hyperparathyroidism were all above the upper limit of normal. These results show that PTH RIA kit "YAMASA" is useful for the differential diagnosis of the disorders of parathyroid function.

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SIEMENS MR SYSTEM "MAGNETOM".
K.Fujii
Siemens Medical Systems Ltd.

SIEMENS MR's have revolutionized applicable diagnostic techniques. Besides well-known ECG-gated and Oblique imaging, the SIEMENS MR's offer multi-echo techniques and free programable pulse sequencing, opening up exciting new diagnostic possibilities.

Some examples of heart/vessel applications by MAGNETOM are as follows;

- (1) Analysis of the heart muscle
- (2) Display of main vessels
- (3) Heart volume and ejection fraction
- (4) Wall motion
- (5) Bolus tracking
- (6) Bolus imaging
- (7) Flow velocity
- (8) Cine display
- (9) Fast imaging

Additionally, the SIEMENS MR can perform several other operations; some possible applications include MR-Angiography (which extracts vessels), Tissue Characterization (which differentiates between normal, benign and malignant tissue), and Chemical Shift Imaging (which separates fat and water).

Na-23 images have already been taken in Japan, using the University of Tokyo's SIEMENS MAGNETOM.

An application of proton imaging, Na imaging, P-31, F-19 and C-13 spectroscopy will be demonstrated using the MAGNETOM.

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SHIMADZU MRI SYSTEM "SMT-50".
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SMT-50 is the 0.5 Tesla superconductive MRI system which provides the top image quality, easy operation, large patient throughput and excellent cost performance.

The high resolution images can be obtained using 512X512 large data acquisition matrix and high sensitive special RF coils, and 1024x1024 fine matrix image monitor is suitable for multi-frame display.

And a variety of application software which include fast imaging, 3D imaging, chemical shift imaging, quantitative measurement of blood flow velocity and so on are available.

The employment of dual-console multi-processor facilities and preset scan parameter buttons improve the patient throughput largely.

In addition, a self-shield magnet enable to install all system in a small site such as 80 m².

Furthermore, the consumption of liquid He is reduced down to 0.2 litre/hr (0.1 litre/hr with a cryopump).

Shimadzu is also developing P-31 spectroscopy, Na imaging and so on using 2 Tesla magnet system. A portion of the results to be obtained from these developments will be reported.